

UNITED STATES AIR FORCE RESEARCH LABORATORY

AIR FORCE JOB STRUCTURING PROCESS

Allan Akman

AKMAN ASSOCIATES, INC.
8555 Sixteenth St., Suite 200
Silver Spring, MD 20910

Doris E. Black

HUMAN EFFECTIVENESS DIRECTORATE
MISSION CRITICAL SKILLS DIVISION
7909 Lindberg Drive
Brooks AFB TX 78235-5352

February 1999

19990330 121

Approved for public release; distribution unlimited.

NOTICES

This report is published in the interest of scientific and technical information exchange and does not constitute approval or disapproval of its ideas or findings.

Using Government drawings, specifications, or other data included in this document for any purpose other than Government-related procurement does not in any way obligate the US Government. The fact that the Government formulated or supplied the drawings, specifications, or other data, does not license the holder or any other person or corporation, or convey any rights or permission to manufacture, use, or sell any patented invention that may relate to them.

The Office of Public Affairs has reviewed this paper, and it is releasable to the National Technical Information Service, where it will be available to the general public, including foreign nationals.

This report has been reviewed and is approved for publication.

**DORIS E. BLACK
Project Scientist**

**LARRY T. LOOPER
Chief
Job Systems Research Branch**

**R. BRUCE GOULD
Acting Chief
Mission Critical Skills Division**

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
<small>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.</small>				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE February 1999	3. REPORT TYPE AND DATES COVERED Final Technical Report, Jan 94 - Jan 95		
4. TITLE AND SUBTITLE Air Force Job Structuring Process		5. FUNDING NUMBERS C - F41624-94-C-5019 PE - 62205F PR - 1123		
6. AUTHOR(S) Allan Akman Doris E. Black		TA - A2 WU - 16		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Akman Associates, Inc. 8555 Sixteenth St., Suite 200 Silver Spring, MD 20910		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Air Force Research Laboratory Human Effectiveness Directorate Mission Critical Skills Division 7909 Lindbergh Drive Brooks AFB, TX 78235-5352		10. SPONSORING/MONITORING AGENCY REPORT NUMBER AFRL-HE-BR-TR-1998-0128		
11. SUPPLEMENTARY NOTES Air Force Research Laboratory Technical Monitor: Dr. Jacobina Skinner, AFRL/HEA, (210) 536-3854				
12a. DISTRIBUTION AVAILABILITY STATEMENT Approved for public release; distribution unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) In recent years, the Air Force, as well as the other military services, has faced a complex set of changing conditions forcing it to reexamine the way in which existing jobs are structured. In FY93, the Air Force Research Laboratory's Human Effectiveness Directorate (then called the Armstrong Laboratory) initiated research through Broad Agency Announcement 92-20 to develop capabilities that will aid in the design of effective jobs to meet future changing requirements. One research initiative was aimed at defining the process by which enlisted jobs are currently designed. The purpose for conducting such an effort was to develop a baseline for determining research priorities and needs. This report presents that description.				
14. SUBJECT TERMS Air Force Job Specialty Structuring Air Force Specialty Code or Classification (AFSC) Integrated Computer and Manufacturing Definition (IDEF) methodologies			15. NUMBER OF PAGES 100	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT Unclassified	18. SECURITY CLASSIFICATION OF THIS PAGE Unclassified	19. SECURITY CLASSIFICATION OF ABSTRACT Unclassified	20. LIMITATION OF ABSTRACT UL	

TABLE OF CONTENTS

	<u>Page</u>
Preface	iv
Executive Summary	vi
Introduction	1
Part 1: Features of the Job Structuring Design Process . . .	5
Air Force Regulations	6
Job Structuring Characteristics	9
"As Is" Procedures	16
Analytical Methods and Models	32
Data and Databases	48
Part 2: IDEF Model	59
Acronyms	87
References	89

List of Figures

1. Air Force enlisted specialty structuring process:
A context model 3
2. Application of analytical methods in the job
structuring design process (IDEF Node A1: Develop
Request for AFS Restructuring) 33
3. Use of existing data and databases in job structuring
design process (IDEF Node A1: Develop Request for AFS
Restructuring) 50
4. IDEF Node Tree: (Re)design Air Force Enlisted
Specialties 61

List of Tables

1. Number of AFSSs and Authorized Strength by Career
Field 10
2. Number of AFSSs and Authorized Strength (in Order
of Most AFSSs in Career Field) 11
3. Number of AFSSs and Authorized Strength (in Order
of Greatest Authorized Strength) 12

PREFACE

This paper provides a detailed description of the process used within the Air Force for structuring enlisted Air Force specialties. It provides the foundation for new research in job design technology to guide job (re)structuring within and across Air Force specialties for flexible and strategic management of the scaled-down force with its evolving missions.

This report provides essential "context information" for shaping research on a prototype decision aid for structuring Air Force enlisted jobs. The information will be used to focus the research effort closely on the present Air Force process, to track the decision aid's compatibility and potential "value added," and to facilitate design for customer acceptance.

The effort reported here is also part of an interservice research project in the job structures technology area for which the Air Force is designated lead agency by the Armed Services Training and Personnel Systems Science and Technology Evaluation and Management (TAPSTEM) Committee. This Air Force-sponsored, interservice project consists of obtaining a detailed description and comparison of each of the services' (Air Force, Navy, and Army) job structuring processes. The information will provide a baseline for identifying ways in which research and development efforts improving job structuring can benefit all three services as well as the Joint Staff. Three other reports pertaining to the Navy, Army, and comparative analyses are planned under this effort.

The authors wish to express appreciation to key senior managers directing the Air Force job structuring process at the time of this project. They made time to discuss their knowledge and views of the process and to review/comment on written narratives prepared by the project investigator. Their participation was essential in developing an accurate and sufficiently detailed working description of the process which will serve as the baseline for planned research in job structures technology. The senior managers consulted on this project are:

- Air Force Career Field Managers: Lt Col John Ladieu (AF/LGMM), CMSgt M. J. Peters (AF/LGMM), CMSgt J. D. Foster (AF/SGHP), CMSgt Ivan Byrd (formerly AF/DPPE), and CMSgt C. G. Santiago (AF/DPPE).

- Mr Joseph McInturff of the Air Force Military Personnel Center, USAF Classification & Analysis Branch (AFMPC/DPMYM)

- Mr Jay Tartell and Maj Randy Agee at the USAF Occupational Measurement Squadron, Occupational Analysis Division (USAFOMSQ/OMY)

Other offices which are gratefully acknowledged for their assistance are: Director of Personnel Plans, Enlisted Policy Division, Utilization and Classification Branch (AF/DPXEU); Air Force Management Engineering Agency, Analysis and Reengineering Directorate (AFMEA/AED); Air Combat Command, Management Engineering Flight, Management Engineering Simulation (ACCMEF/MES); and Office of the Under Secretary of Defense (Personnel & Readiness/Requirements & Resources), Information Management Office (OUSD(P&R/R&R)).

The work for this effort was performed under Contract No. F41624-94-C-5019 (Option 1) by Akman Associates, Incorporated for the Manpower and Personnel Research Division of the Armstrong Laboratory, Human Resources Directorate (AL/HR). The relevant work unit was 77192108, "DoD Job Structuring Processes."

AIR FORCE JOB STRUCTURING PROCESS

EXECUTIVE SUMMARY

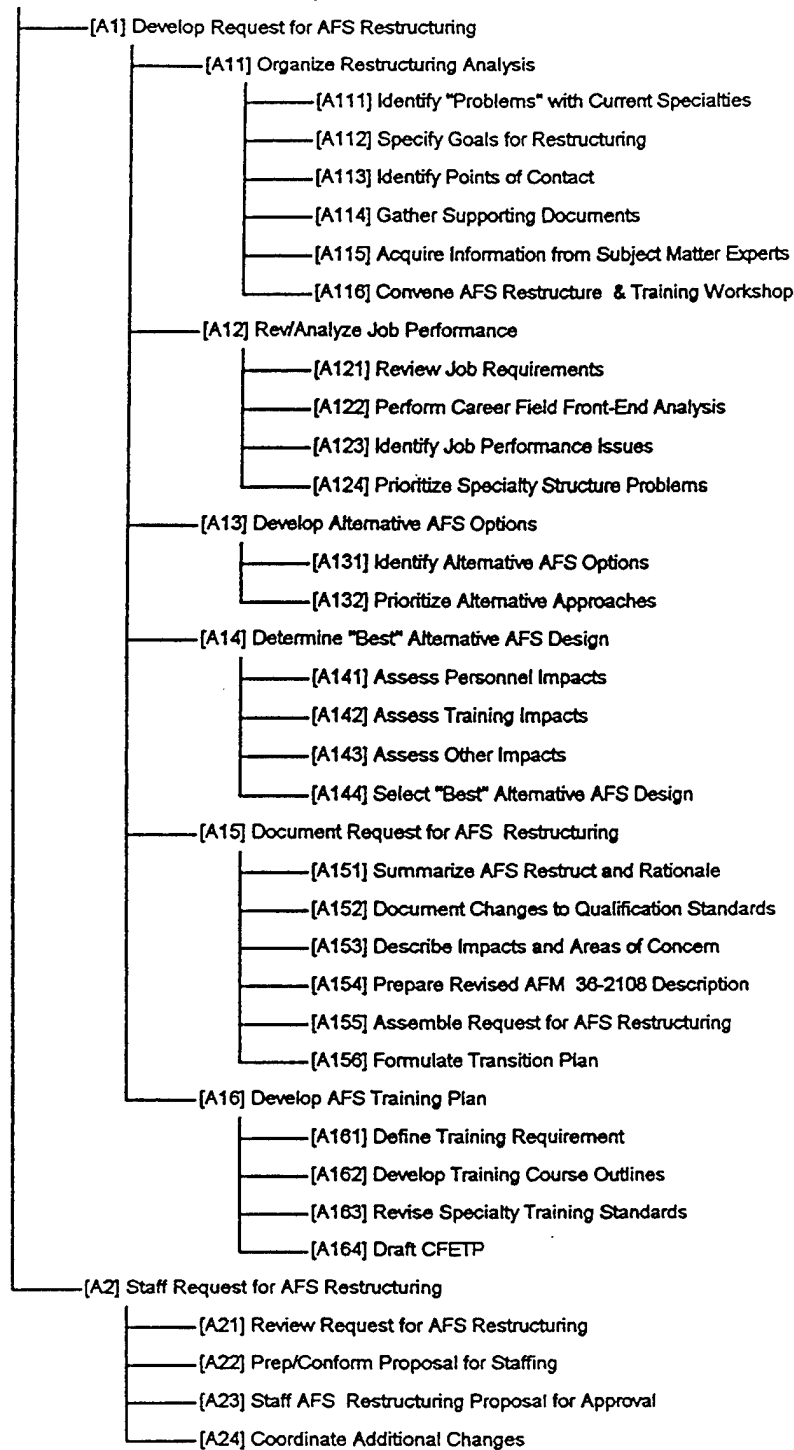
In recent years, the Air Force, as well as the other military services, has faced a complex set of changing conditions forcing it to reexamine the way in which existing jobs are structured. In FY 1993, the Air Force Armstrong Laboratory's Human Resources Directorate (AL/HR) initiated research through Broad Agency Announcement 92-20 to develop capabilities that will aid in the design of effective jobs to meet future changing requirements. One AL/HR research initiative was aimed at defining the process by which enlisted jobs are currently designed. The purpose for conducting such an effort was to develop a baseline for determining research priorities and needs. This report presents that description based on information gathered during February-June 1994.

This process description is presented in two parts. The first part documents key features. There are sections describing pertinent Air Force regulations, characteristics of the job classification structure, current procedural steps, analytical methods and models, and data and databases. The second part presents a graphical model displaying the principal steps in the job structuring design process; the model was developed using IDEF, a systems analysis tool designed for portraying the functional requirements of a process in a hierarchical manner.


The main activities and steps comprising current procedures for restructuring enlisted Air Force Specialties (AFSS) can most readily be seen by viewing two products from the IDEF modeling: the IDEF Node Tree and the IDEF A0 Node chart depicting the process as two main activities: (1) developing the request for AFS restructuring and (2) staffing the request. These follow this page. When viewed in its entirety, the IDEF model identifies and describes the restructuring process in terms of 39 different activities that typically occur.

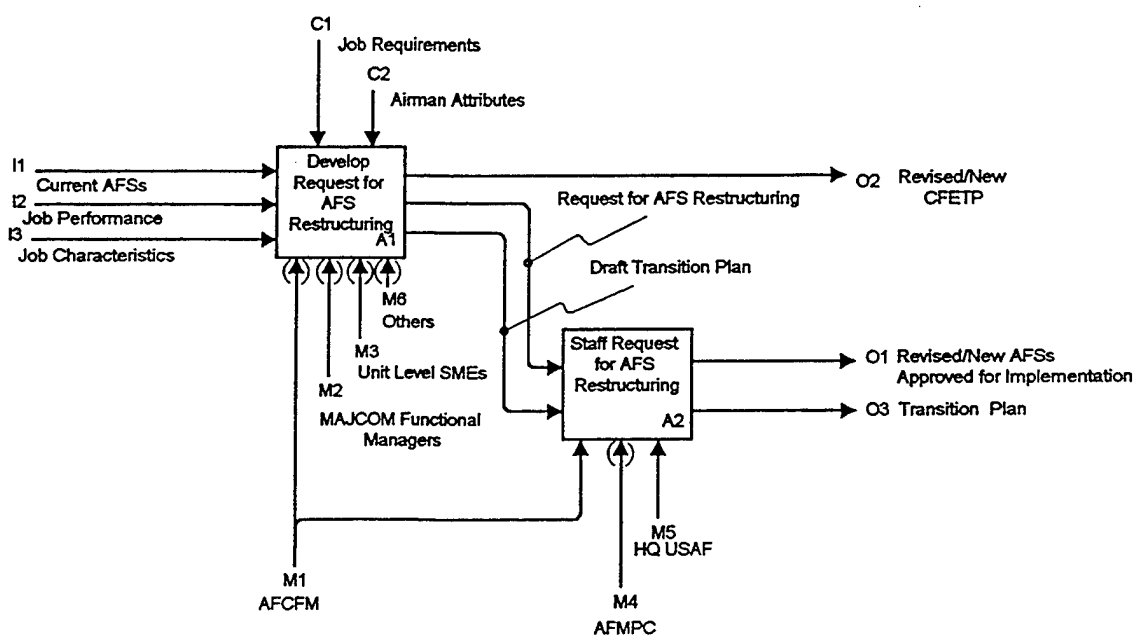
For a number of reasons, views different from those depicted here likely exist of the number and specific steps comprising the job design restructuring process. No single, official source of information, documented or otherwise, defining the AFS structuring process exists. Participants engaged in any single restructuring come to the process and leave with different perspectives. The principal regulations governing enlisted classification are undergoing revision. Effort has focused on capturing the process based on actual day-to-day practices. While other views may exist, they will not likely depart from the substance of the description presented here nor mitigate the use of this description for identifying research priorities.

[A0] (Re)Design Air Force Enlisted Specialties



IDEF Node Tree: (Re)Design Air Force Enlisted Specialties

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force AUTHOR: Akman Associates, Inc.	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT: 
			DRAFT			
			RECOMMENDED			
			PUBLICATION			



NODE: A0	TITLE: (Re)Design Air Force Enlisted Specialties	PAGE: 6
----------	--	---------

AIR FORCE JOB STRUCTURING PROCESS

Introduction

Background

In recent years, the Air Force, as well as the other military services, has faced a complex set of changing conditions, including technological evolution, new deployment concepts, force downsizing, and organizational and mission changes. These changes force the services to reexamine the way in which existing jobs are structured and lead to significant job restructuring or redesign efforts.

In FY 1993, the Air Force Armstrong Laboratory's Human Resources Directorate (AL/HR) initiated research through Broad Agency Announcement 92-20 to develop capabilities that can aid in the design of effective jobs to meet future changing requirements. One AL/HR research initiative was aimed at defining the process by which jobs are currently designed. There were two purposes behind this research. One was to establish a procedural baseline which could be used as a standard reference underlying other research efforts aimed at developing decision aid tools. The second was to identify areas among the services' procedures that offer promise for integrated research.

The effort to define job structuring procedures was organized by AL/HR in four phases. The objectives of the first three were to describe the procedures for the Air Force, Navy, and Army, respectively. The fourth was to perform a comparative analysis of the services' job structuring processes. This report documents the results of the first phase, namely the description of the Air Force's job structuring design process.

Context

The major focus of this description is the portrayal of the Air Force specialty design process in the form of an IDEF model¹. The process, "Re(Design) Air Force Enlisted Specialties," is the subject. This is the second of three procedures that comprise the Air Force Enlisted Specialty Structuring Process. As shown in Figure 1, the first step (A1)

¹"IDEF" is a graphic technique for depicting functional requirements. The method can be used, as in this instance, to portray a process by linking a series of activity boxes by inputs and outputs. The technique also identifies process controls and mechanisms or agents that facilitate the process. IDEF was developed by the Air Force to support its Integrated Computer and Manufacturing (ICAM) program. The technique used here is one of six ICAM DEFINITION methodologies.

in Figure 1, the first step (A1) in restructuring is to determine the need for restructuring; this usually involves recognizing the need and determining that a restructuring is potentially feasible. The third step (A3) is to implement the revised/new Air Force Specialties (AFSSs); this entails significant effort devoted to revising and developing training and testing material as well as transition training.

The second step, (Re)Design Air Force Enlisted Specialties, is discussed in detail in this report. This is the process by which the tasks associated with existing AFSSs are combined together or reconfigured to create new AFSSs which are then reviewed and approved, if meeting a variety of requirements, for implementation.

Definitions

Three sets of terms are used here in ways that may be confusing without some explanation.

1. The terms "structuring" and "restructuring" are generally used in this report interchangeably. Most often, job structuring involves restructuring existing jobs; occasionally, there are instances where new jobs are being structured. The context has been used here as the basis for using one or the other term.
2. An Air Force occupation is often referred to as a "specialty". Sometimes, the term "job" is also used. Some observers make a distinction between job and specialty. These terms are used here synonymously.
3. In Air Force nomenclature, there are both "AFSC" and "AFS"; the former is the Air Force Specialty Code or Classification and the latter is the Air Force Specialty. Sometimes, these acronyms are used interchangeably. AFS is used here to refer to Air Force specialty or job.

Boundaries and Limitations

A variety of factors has determined the present form of this description. Some of these factors are attributable to resource constraints while others reflect the simplification necessary to depict complex processes. Five of these factors are most significant.

First, the description is based on "as is" procedures, i.e., based on the procedural steps that appear to be presently used

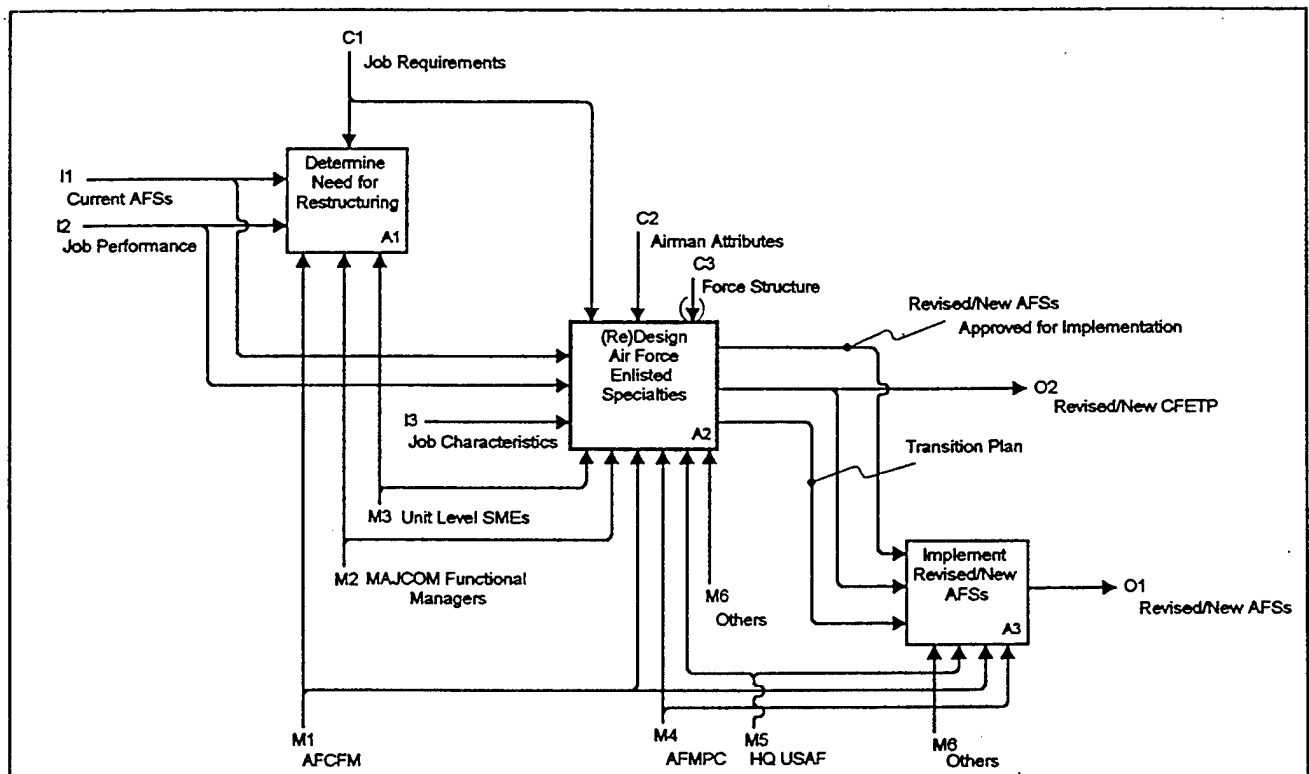


Figure 1. Air Force Enlisted Specialty Structuring Process: A Context Model

for restructuring AFSSs. The "as is" procedures were determined from interviews with Air Force career field managers (AFCFMs), personnel managers and analysts, training personnel, utilization and training workshop (U&TW) participants, and AFMPC/DPMYMC staff, among others. These people were interviewed during February-June 1994.

Second, procedural descriptions can vary in the level of detail that is documented. Furthermore, procedures depicted in IDEF models can be disaggregated into increasingly more refined steps and substeps. Depending upon the use of the model, the level of detail can range over a wide latitude. In this effort, the task has been to define the AFS restructuring process with 2-3 levels of detail.

Third, the model presented here addresses restructuring enlisted AFSSs in the active Air Force. No attention is given to officer specialty structuring or to issues which may be unique to the Air Force Reserve or Air National Guard.

Fourth, there is no single source of information, documented or otherwise, defining the AFS structuring process. A host of Air Force personnel participate in any restructuring effort. Each participant is usually involved in different steps at varying levels of effort and responsibility. Each restructuring has its own unique aspects. There consequently is not necessarily any single, common view of all of the steps.

Fifth, for many years, Air Force Regulation (AFR) 39-1 has been the regulation governing enlisted classification. During the period that this research has been conducted, the Air Force has been in the process of revising the structure of its policies and directives. AFR 39-1 is being replaced by Air Force Manual (AFM) 36-2108. At the same time, efforts have been underway to document more formally the role of the AFCFM. Reliance was placed on actual day-to-day practices which appeared consistent with the newly emerging policies.

Organization of Report

This report has two parts. The first describes various features of the Air Force's job structuring design process. This includes a discussion of current Air Force policy and regulations, job structure characteristics, "as is" procedures, current analytical methods and models, and data and databases.

The second part is the IDEF model itself. This was developed, in part, using META Software Corporation's Design/IDEF 3.0 software. The IDEF model of the Air Force job structuring design process consists of a set of charts and accompanying narrative. The model was developed based on the information assembled in Part 1, particularly the description of the "as is" procedure.

Part 1: Features of the Job Structuring Design Process

This part of the report documents significant features of the Air Force's job structuring design process. There are five sections:

Air Force Regulations

Job Structuring Characteristics

"As Is" Procedures

Analytical Methods and Models

Data and Databases.

This information was used in developing the IDEF model presented in Part 2. The description of the "as is" procedures is also included with the IDEF model as explanatory text.

Air Force Regulations

This section describes the major Air Force regulations controlling enlisted job classification and structure. There have been two: AFR 35-1, Military Personnel Classification Policy, dated 27 Sep 1990 and AFR 39-1, Airman Classification, dated 15 March 1991. During the period while this research was conducted, the Air Force was in the process of revising these regulations and, in their place, issuing new Air Force instructions (AFI) and AFMs. AFR 35-1 is to be replaced by AFI 36-2101, and AFR 39-1 will be replaced by AFM 36-2108 (published as AFMAN 36-2108). Knowledgeable readers will recognize that current practice has departed in some respects, particularly with respect to the role and responsibility of the AFCFM, from the procedures stated in the existing regulations and described here. AFI 36-2101 and AFM 36-2108 should bring stated policy and actual practice back in line.

AFR 35-1, Military Personnel Classification Policy

Scope. This regulation states the policies on personnel classification for officers and airmen. It defines terms and specifies personnel classification responsibilities. The focus is on assignment of Air Force Specialty Codes (AFSCs) to officers and airmen.

Applicability. AFSC coding structure; responsibilities for enlisted classification.

AFSC coding structure (based on AFI 36-2101). Air Force specialties are identified by a five character code. For example, an Airborne Radar Systems Craftsman is designated "1A572", where:

- 1 = Career Grouping, Operations
- A = Career Field, Aircrew Operations
- 5 = Career Field Subdivision, Airborne Systems
- 7 = Skill Level, Craftsman
- 2 = Specific AFSC, Radar.

Key terms defined. Key terms are defined in this regulation including the following: Air Force Specialty (AFS), Air Force Specialty Code (AFSC), AFSC Prefix, AFSC Suffix, Awarded AFSC, Duty AFSC, Position, Primary AFSC, Related AFSC, Second AFSC, Specialty Description, Special Experience Identifier (SEI), Capper AFSC, Career Field, Career Field Ladder, Skill Level, Apprentice Knowledge Test (AKT), Armed Forces Classification Test (AFCT), Armed Services Vocational Aptitude Battery (ASVAB), Aptitude Cluster, Physical Profile Serial, and Strength Aptitude.

Responsibilities for enlisted personnel classification. The regulation states responsibilities for AFMPC and the AFS functional manager. AFMPC/DPMRPQ (now DPMYMC) makes, monitors, and interprets policies for classifying military personnel; it develops and maintains airman classification system currency. The AFS functional manager provides help in developing special descriptions and SEIs, by insuring specialty descriptions are current with mission needs and coordinating on new classifications and proposed changes.

AFR 39-1, Airman Classification

Scope. This regulation establishes the occupational structure of the Air Force enlisted force. It describes the regulation's use, the classification structure, the specialty description, and procedures for requesting new or revised AFSCs; attachments provide specialty descriptions for all enlisted AFSCs.

Regulation use. The regulation is used to identify different types of Air Force jobs and the qualifications of airmen to fill these jobs; descriptions provide the occupational standards required for successful job performance. The standards are used to procure, classify, and employ airmen and to develop career programs for initial training, retraining, and skill upgrade, and to structure unit manpower document (UMD) positions.

Specialty descriptions. The specialty descriptions have five parts: heading, specialty summary, duties and responsibilities, specialty qualifications, and specialty shredouts.

The "heading" consists of the specialty title, effective date, and the assigned AFSC. The "specialty summary" gives a concise statement of the scope and characteristics of the specialty; it provides the conversion table subgroup as listed in the Department of Defense (DoD) Occupational Conversion Table. "Duties and Responsibilities" describes representative technical and supervisory duties and responsibilities of the 9-, 7-, and 5-skill level. "Specialty qualifications" establishes both desirable and mandatory occupational standards for effective performance in the AFS; qualifications may consist of all or part of the following: knowledge, education, experience, training, physical standards, security clearances, licenses, etc. Finally, "specialty shredouts" lists alphabetical suffixes used with basic AFSCs to identify equipment or functions.

Responsibilities. The regulation identifies responsibilities for Headquarters (HQ) Air Force Military Personnel Center (AFMPC), training managers, and command and Air Staffs. HQ AFMPC will publish semiannual changes to this regulation. Training managers will review training courses that provide skills and abilities for AFSCs that are changed. Commands and Air Staff have continuing responsibility to review skill classifications and

identify requirements for change submitting proposed changes through channels to HQ AFMPC.

Procedures. In preparing a change proposal, the initiating agency should consider the specific job requirement, the feasibility of an existing AFSC (as is or modified) to meet the requirement, whether the population size will support a trained personnel requirement (TPR), and the advantages and disadvantages of the change, among other issues.

At base level, the consolidated base personnel office (CBPO) reviews proposal contents to insure they meet requirements and sends the completed proposal to the Major Command (MAJCOM) director of personnel. The MAJCOM will ensure the proposal is complete and obtain an evaluation from the functional manager. The MAJCOM forwards the request to AFMPC including its recommendation for approval or disapproval. Air Staff can also initiate proposals.

Change proposal contents. A change proposal includes the following information: a brief description of the proposed change; the rationale for the proposed change; description of duties and tasks including major tasks, equipment, special tools as well as details of knowledge, education, and experience; evaluation of training requirements; detailed summary of personnel and manpower impacts, and recommendation for conducting an occupational survey.

Other Regulations

AFVA 39-1, Airman Classification Structure Chart. The Airman Classification Structure Chart is a visual aid which is used in conjunction with AFR 39-1. The current draft version, to be used with AFM 36-2108, shows all enlisted AFSCs and job titles for approximately 280 specialties in 36 career fields at all skill levels.

AFI 36-2623, Occupational Analysis. This instruction supports the Air Force's occupational survey program. The instruction discusses how to collect, analyze, disseminate, and use occupational survey data to adjust or establish AFS programs. It provides instruction for surveying occupations and using survey data.

Job Structuring Characteristics

Introduction

To gain some insight into the scope of enlisted specialty structuring in the Air Force, various data may be considered including the number of AFSs, the number of airmen and their distribution among AFSs, the frequency with which AFSs are restructured, and the level of effort involved in changing AFS structures.

The availability of data, however, for this purpose is uneven. Identifying the number of AFSs and their enlisted population is easily accomplished. On the other hand, determining the frequency and level of effort involved in specialty structuring is very difficult. And, data useful in assessing the impact of past AFS restructurings on the affected enlisted personnel and their ability to perform their restructured jobs are generally non-existent; developing such data, if at all feasible, would require costly and complex research.

The limited data, nonetheless, provide some insight into the scope of specialty structuring that may potentially occur in the Air Force and the opportunities for strengthening the enlisted force.

Number of AFSs

There are approximately 280 AFSs, disregarding suffixes and skill levels; these are organized into 36 career fields which are in turn assigned to one of nine career groupings.² Table 1 lists the number of AFSs by career field within career groupings. Also shown is the estimated authorized strength by AFS.³ Of the 36 career fields, the five largest career fields based on the number of AFSs are: manned aerospace maintenance, intelligence, communications-electronics systems maintenance, medical, and public affairs (See Table 2). Together, they represent more than 60 percent of the enlisted AFSs. Approximately 100 AFSs are distributed over the other 31 career fields.

Table 3 displays these same data except the career fields have been listed in order of largest authorized strength. The five largest career fields based on authorized strength are:

²Source: Draft Airman Classification Structure Chart, AFVA 39-1 (to be used in conjunction with AFM 36-2108), 31 October 1993.

³Source: December 1993 Uniform Airman Record (UAR) Duty AFSC (DAFSC) and Career Field Distributions, AL/HR.

Table 1

Number of AFSSs and Authorized Strength by Career Field

CAREER GROUP	CAREER FIELD	#-AFSCs	%-AGE	STRENGTH	%-AGE
	TOTAL	280	100.0%	352230	100.0%
OPERATIONS	1A Aircrew Operations	9	3.2%	6987	2.0%
	1C Command Control Systems Operations	10	3.6%	12901	3.7%
	1N Intelligence	42	15.0%	11043	3.1%
	1S Safety	1	0.4%	403	0.1%
	1T Aircrew Protection	3	1.1%	2579	0.7%
	1W Weather	1	0.4%	2740	0.8%
LOGISTICS	2A Manned Aerospace Maintenance	51	18.2%	75820	21.5%
	2B Marine	2	0.7%	42	0.0%
	2E Communications-Electronics Systems	28	10.0%	21320	6.1%
	2F Fuels	1	0.4%	4541	1.3%
	2G Logistics Plans	1	0.4%	779	0.2%
	2M Missile & Space Systems Maintenance	7	2.5%	3742	1.1%
	2P Precision Measurement	1	0.4%	1967	0.6%
	2R Maintenance Management Systems	2	0.7%	2114	0.6%
	2S Supply	3	1.1%	17228	4.9%
	2T Transportation and Vehicle Maintenance	9	3.2%	14852	4.2%
SUPPORT	2W Munitions and Weapons	11	3.9%	18077	5.1%
	3A Information Management	1	0.4%	15552	4.4%
	3C Communications-Computer Systems	6	2.1%	16687	4.7%
	3E Civil Engineering	13	4.6%	22987	6.5%
	3H Historian	1	0.4%	116	0.0%
	3K Commissary Services	1	0.4%	803	0.2%
	3M Morale, Welfare, Recreation Services	1	0.4%	5411	1.5%
	3N Public Affairs	22	7.9%	1636	0.5%
	3P Security Police	5	1.8%	25961	7.4%
	3R Printing Management	1	0.4%	340	0.1%
	3S Mission Support	5	1.8%	11086	3.1%
	3U Manpower	1	0.4%	637	0.2%
	3V Visual Information	4	1.4%	2100	0.6%
MEDICAL & DENTAL	4X Medical	28	10.0%	23801	6.8%
	4Y Dental	2	0.7%	3047	0.9%
PROFESSIONAL	5J Paralegal	1	0.4%	827	0.2%
	5R Chaplain Service Support	1	0.4%	513	0.1%
ACQ & FIN MGT	6C Contracting	1	0.4%	1326	0.4%
	6F Financial	3	1.1%	4711	1.3%
SPEC INV	7S Special Investigation	1	0.4%	804	0.2%
SPEC DUTY ID	8X Special-Duty Identifiers			6918	2.0%
REPORTING ID	9X Reporting Identifiers			9832	2.8%

Sources: Draft Airman Classification Structure Chart, AFVA 39-1 (to be used in conjunction with AFM 36-2108), 31 October 1993.

December 1993 Uniform Airman Record (UAR) DAFSC and Career Field Distributions, AL/HR.

Table 2

Number of AFSSs and Authorized Strength (in Order of Most AFSSs in Career Field)

	CAREER FIELD	#-AFSCs	%-AGE	STRENGTH	%-AGE
	TOTAL	280	100.0%	352230	100.0%
2A	Manned Aerospace Maintenance	51	18.2%	75820	21.5%
1N	Intelligence	42	15.0%	11043	3.1%
2E	Communications-Electronics Systems	28	10.0%	21320	6.1%
4X	Medical	28	10.0%	23801	6.8%
3N	Public Affairs	22	7.9%	1636	0.5%
3E	Civil Engineering	13	4.6%	22987	6.5%
2W	Munitions and Weapons	11	3.9%	18077	5.1%
1C	Command Control Systems Operations	10	3.6%	12901	3.7%
1A	Aircrew Operations	9	3.2%	6987	2.0%
2T	Transportation and Vehicle Maintenance	9	3.2%	14852	4.2%
2M	Missile & Space Systems Maintenance	7	2.5%	3742	1.1%
3C	Communications-Computer Systems	6	2.1%	16687	4.7%
3P	Security Police	5	1.8%	25961	7.4%
3S	Mission Support	5	1.8%	11086	3.1%
3V	Visual Information	4	1.4%	2100	0.6%
1T	Aircrew Protection	3	1.1%	2579	0.7%
2S	Supply	3	1.1%	17228	4.9%
6F	Financial	3	1.1%	4711	1.3%
2B	Marine	2	0.7%	42	0.0%
2R	Maintenance Management Systems	2	0.7%	2114	0.6%
4Y	Dental	2	0.7%	3047	0.9%
1S	Safety	1	0.4%	403	0.1%
1W	Weather	1	0.4%	2740	0.8%
2F	Fuels	1	0.4%	4541	1.3%
2G	Logistics Plans	1	0.4%	779	0.2%
2P	Precision Measurement	1	0.4%	1967	0.6%
3A	Information Management	1	0.4%	15552	4.4%
3H	Historian	1	0.4%	116	0.0%
3K	Commissary Services	1	0.4%	803	0.2%
3M	Morale, Welfare, Recreation Services	1	0.4%	5411	1.5%
3R	Printing Management	1	0.4%	340	0.1%
3U	Manpower	1	0.4%	637	0.2%
5J	Paralegal	1	0.4%	827	0.2%
5R	Chaplain Service Support	1	0.4%	513	0.1%
6C	Contracting	1	0.4%	1326	0.4%
7S	Special Investigation	1	0.4%	804	0.2%
8X	Special-Duty Identifiers			6918	2.0%
9X	Reporting Identifiers			9832	2.8%

Sources: Draft Airman Classification Structure Chart, AFVA 39-1 (to be used in conjunction with AFM 36-2108), 31 October 1993.

December 1993 Uniform Airman Record (UAR) DAFSC and Career Field Distributions, AL/HR.

Table 3

Number of AFSSs and Authorized Strength (in Order of Greatest Authorized Strength)

	CAREER FIELD	#-AFSCs	%-AGE	STRENGTH	%-AGE
	TOTAL	280	100.0%	352230	100.0%
2A	Manned Aerospace Maintenance	51	18.4%	75820	21.5%
3P	Security Police	5	1.8%	25961	7.4%
4X	Medical	28	10.1%	23801	6.8%
3E	Civil Engineering	13	4.7%	22987	6.5%
2E	Communications-Electronics Systems	28	10.1%	21320	6.1%
2W	Munitions and Weapons	11	4.0%	18077	5.1%
2S	Supply	3	1.1%	17228	4.9%
3C	Communications-Computer Systems	6	2.2%	16687	4.7%
3A	Information Management	1	0.4%	15552	4.4%
2T	Transportation and Vehicle Maintenance	9	3.2%	14852	4.2%
1C	Command Control Systems Operations	10	3.6%	12901	3.7%
3S	Mission Support	5	1.8%	11086	3.1%
1N	Intelligence	42	15.2%	11043	3.1%
9X	Reporting Identifiers			9832	2.8%
1A	Aircrew Operations	9	3.2%	6987	2.0%
8X	Special-Duty Identifiers			6918	2.0%
3M	Morale, Welfare, Recreation Services	1	0.4%	5411	1.5%
6F	Financial	3	1.1%	4711	1.3%
2F	Fuels	1	0.4%	4541	1.3%
2M	Missile & Space Systems Maintenance	7	2.5%	3742	1.1%
4Y	Dental	2	0.7%	3047	0.9%
1W	Weather	1	0.4%	2740	0.8%
1T	Aircrew Protection	3	1.1%	2579	0.7%
2R	Maintenance Management Systems	2	0.7%	2114	0.6%
3V	Visual Information	4	1.4%	2100	0.6%
2P	Precision Measurement	1	0.4%	1967	0.6%
3N	Public Affairs	22	7.9%	1636	0.5%
6C	Contracting	1	0.4%	1326	0.4%
5J	Paralegal	1	0.4%	827	0.2%
7S	Special Investigation	1	0.4%	804	0.2%
3K	Commissary Services	1	0.4%	803	0.2%
2G	Logistics Plans	1	0.4%	779	0.2%
3U	Manpower	1	0.4%	637	0.2%
5R	Chaplain Service Support	1	0.4%	513	0.1%
1S	Safety	1	0.4%	403	0.1%
3R	Printing Management	1	0.4%	340	0.1%
3H	Historian	1	0.4%	116	0.0%
2B	Marine	2	0.7%	42	0.0%

Sources: Draft Airman Classification Structure Chart, AFVA 39-1 (to be used in conjunction with AFM 36-2108), 31 October 1993.

December 1993 Uniform Airman Record (UAR) DAFSC and Career Field Distributions, AL/HR.

manned aerospace maintenance (approximately 75,000); security police (approximately 26,000); medical (approximately 24,000); civil engineering (approximately 23,000); and, communications-electronics systems maintenance (approximately 21,000). Together, these five career fields represent approximately 170,000, or 48 percent, of the authorized strength. The remaining 180,000 authorized strength is distributed among the other 31 career fields.

These numbers by themselves do not necessarily provide insight into the career fields that are most affected by AFS restructurings:

For example, manned aerospace maintenance is the focus of a lot of restructuring activity and happens also to be the largest enlisted career field in terms of strength and AFSs; its AFSs receive constant attention because of their high profile mission and their numbers.

On the other hand, other career fields that have large strengths, e.g., security police and medical, do not involve a lot of specialty restructuring for various reasons unique to each career field.

These numbers do provide some frame of reference with respect to the numbers of AFSs and airmen potentially affected by restructurings. Depending on which career field is the focus of a restructuring, a large number of AFSs and airmen can be affected even though only a few AFSs are being addressed. On the other hand, a large number of AFSs can be restructured with minimal impact on airmen and strength.

Number of AFS Restructurings and Level of Effort

While there are no definitive data on the number of restructurings occurring annually or on the level of effort involved, estimates are possible.

Estimated number of AFS restructurings annually. AFR 39-1 can be used as a reference to estimate the number of AFS restructurings that occur.⁴ The regulation has been published semiannually. Each revised edition has contained a "Change Summary and Conversion Guide" which synthesizes the latest AFS changes.

⁴For these purposes, the October 1992 update of AFR 39-1 was used to estimate the number of AFS restructurings. Because of the major overhaul of the AFS structure in FY 1993, a more current, official version has not yet been issued.

The change guide can be used to make an estimate of the number of restructurings but, because not all the changes listed in the guide are AFS restructurings, only an estimate can be developed. Besides restructurings, the guide includes code changes, title changes, updates of descriptions of duties and responsibilities, none of which result in any structural change in AFS tasks or qualifications. There are also numerous deletions, some affecting the existence of AFSSs while others remove SEIs or prefixes.

After all the changes that do not appear to involve restructurings are excluded, there appear to be 15-20 restructuring actions in the October 1992 AFR 39-1 update. Since the update is published semiannually, there may be as many as 30-40 AFS restructurings annually if the October 1992 update is representative. Not all of these 30-40 restructurings are of the same magnitude. Some involve a single AFS while others involve one or more AFSSs over several career fields.

Estimated level of effort. There are no definitive data related to the amount of effort invested in restructuring AFSSs. There are three phases of activity: developing the job structure change proposal, staffing the proposal, and formalizing the change proposal. A U&TW initiated and organized by the AFCFM is the principal mechanism for accomplishing the first phase and AFMPC/DPMYMC has the lead for accomplishing the other phases.

A typical U&TW, lasting five days, may have 30-50 participants; some have as many as 70-80. Leaving aside time spent in preparation, the U&TW uses approximately $\frac{1}{2}$ -1 man-year of effort (40 hours x 30 participants = 1200 hours/1920 man-hours/year; 40 hours x 50 participants = 2000 hours/1920 man-hours/year). The total U&TW effort, therefore, may be 20-40 man-years annually (30 restructurings x $\frac{1}{2}$ man-year; 40 restructurings x 1 man-year).⁵

AFMPC/DPMYMC has four individuals involved with staffing and publishing AFS changes. This represents an additional 4 man-years of effort.

Although these estimates are very crude and cannot be used reliably as true measures of the effort, they do provide some useful insight regarding the level of effort involved in AFS structuring. Two conclusions might reasonably be made:

⁵The burden of organizing and conducting the U&TWs is not spread evenly among the AFCFMs. A few AFCFMs have responsibility for 20-40 AFSSs while most look after only a handful of AFSSs.

1. There is a significant amount of time devoted to restructuring enlisted AFSSs from both the perspective of a single action or all restructurings.
2. The majority of the effort appears to occur within the U&TW.

Placing level of effort estimates in perspective. While the data are sufficient to suggest a significant level of effort is involved in restructuring AFSSs, this effort pales alongside the impact such efforts have on the airmen whose AFSSs are being restructured. Literally thousands of airmen can be affected by AFS changes. Their ability to qualify for their specialties and their ability to perform their jobs and meet mission requirements are at stake. Because of these high stakes, research that enhances the ability of the U&TW and AFMPC participants to make the "right" restructuring decisions can have very high payoffs to the Air Force.

"As Is" Procedures

Introduction

This section presents a description of the procedures the Air Force currently uses to restructure its enlisted specialties, i.e., its "as is" procedures. This narrative was developed based on information provided by various participants in the restructuring process. This description adapts the IDEF notation conventions, identifying each procedure with a unique designator, Axxx. The main process, A0 (Re)Design Air Force Enlisted Specialties, is comprised of two major activities:

- A1 Develop Request for AFS Restructuring
- A2 Staff Request for AFS Restructuring.

Each of these, in turn, is disaggregated into its substeps. For example, the A1 procedure is comprised of six substeps. The first, designated A11, is "Organize Restructuring Analysis."

In addition to the process description presented here, at the end of this section is a discussion of the inputs, controls, outputs, and mechanisms associated with this process.

A0 (Re)Design Air Force Enlisted Specialties

"(Re)Design Air Force enlisted specialties" encompasses the actions taken to create or modify enlisted occupational specialties including identification of problems or needs leading to restructuring, the analysis and design of alternative specialties, and the formalization of new specialties into the Air Force's system of regulations and policy.

Context. The immediate context for this procedure is the larger process involved in maintaining the Air Force's occupational classification system; this larger process includes determining that the need exists to create new specialties or restructure existing specialties as well as the process for implementing the changes in personnel policies and training necessary for airmen to be qualified in the new specialties.

Maintaining the Air Force's occupational classification system is one of many processes that exists as part of the activity, Perform Military Personnel Operations, documented in the DoD Military Personnel Corporate Model (OASD, 1992). In the DoD context, AFS structuring activity has been identified as part of the process to classify or reclassify skills (A322).

Perspective. This description of the AFS structuring process has been developed from the perspective of the principal participants in the process who are involved in determining the changes that need to be made to existing AFSs or developing new AFSs in response to recognized needs. The participants include the

AFCFM, participants in AFS restructure and training workshops (R&TW) including the MAJCOM functional managers, and the personnel of the classification branch of the Air Force Military Personnel Center (AFMPC/DPMYMC).

Purpose. The primary purpose of this description is to create a procedural baseline which can be used by AL/HR to identify research needs and priorities. Secondly, this description may also be used as a procedural reference for participants in the restructuring process.

A1 Develop Request for AFS Restructuring

"Develop Request for AFS Restructuring" is one of two major processes in designing new or modified AFSSs. Its purpose is to perform the analysis and develop proposals for modified AFSSs in response to perceived problems or needs. This process, the principal analytical activity that occurs with respect to restructuring, involves six steps: recognizing need, analyzing job requirements and performance, developing alternative specialty structures, determining the best approach for meeting the job requirement, documenting the restructuring request, and developing career training plans for subsequent staffing and approval. While there are numerous participants in this procedure from throughout the Air Force, the key players include the AFCFM, who initiates AFS restructuring workshops, and the functional community managers who represent MAJCOM interests pertinent to the AFSSs under review.

Most of the procedures in this process occur in preparation for or within the context of an AFS R&TW. There are instances, however, when restructuring is undertaken by the AFCFM without a formal R&TW occurring. In these circumstances, many of the steps described here at the 3-digit level either do not occur or do not occur explicitly.

A11 Organize Restructuring Analysis

Once a need has been established for structuring or restructuring one or more AFSSs, the initial procedure is to organize the analysis by developing and gathering basic information, identifying points of contact and interested parties, and convening an AFS R&TW.

A111 Identify "Problems" with Current Specialties

The AFCFM, in addition to other responsibilities, monitors the condition of career field AFSSs through contacts with MAJCOM functional managers and subject matter experts at the unit level.

Based on job performance, training, and changes in equipment, problems associated with the structure of an AFS, as observed in the field by senior airmen and others, are identified. These structural problems may relate to duplication of tasks, job performance difficulty, training difficulty, career field progression, and/or personnel utilization.

A112 Specify Goals for Restructuring

Changes in existing AFSs, be it restructuring one or more AFSs, merging two or more AFSs, among other possible changes, must be responsive to needs and problem resolution. Early in the process, goals for restructuring are established so that proposed changes are designed to respond to the needs and eliminate problems. To the extent participants in the restructuring process understand the goals early on, there is greater likelihood that change proposals will be developed that meet current and future Air Force needs.

A113 Identify Points of Contact

Participants, primarily subject matter experts, in the restructuring process must be identified and arrangements made for their active participation, initially and primarily through the AFS restructure and training workshop. These points of contact will include MAJCOM functional managers and representatives from AFMPC, Air Education and Training Command (AETC), Occupational Measurement Squadron (OMS), among others.

A114 Gather Supporting Documents

Documentation concerning the AFSs, particularly those pertaining to requirements and responsibilities, must be gathered. This documentation includes: any pertinent Air Force policy directives (AFPDs), AFIs, AFMs, or Air Force pamphlets (AFPs); all applicable Air Force and MAJCOM job qualification standards (JQS); current AFM 36-2108 specialty descriptions; list of all MAJCOM training courses; specialty training standards (STS); course training standard (CTS), course chart, and plan of instruction (POI); and training extracts and other occupational survey data; among others. If the nature of the potential changes to the AFSs are clear, there may also be strawman STS and Career Field Education

and Training Plans (CFETP) at this early stage.

A115 Acquire Information from Subject Matter Experts

MAJCOM functional managers and other subject matter experts (SMEs) are asked to provide information pertaining to minimum training requirements, standards, and support resources. SMEs identify and review current job descriptions, job performance requirements, skill level training requirements, career development course training requirements, wartime training requirements, core tasks, MAJCOM unique requirements, supporting resources, and AFS conversion requirements.

A116 Convene AFS Restructure and Training Workshop

Having laid the groundwork through the preceding steps for identifying the problems with AFSs and their current status, the AFCFM convenes an AFS R&TW, more commonly referred to as the utilization and training workshop when AFS restructuring is not the primary agenda item. AFSs may be restructured in either forum. The U&TW usually has a heavy focus on training initiatives whereas the primary agenda for an AFS R&TW is restructuring AFSs.

A12 Review/Analyze Job Performance

Within the R&TW, the initial step is to review and analyze the job performance data that has been gathered and provided to the participants. This review aims to identify the job performance requirements, assess the actual job performance, review specialty training, and determine what current problems need to be resolved and their priority for resolution. Unlike the identification of "problems" occurring in A11 that is based on field observation, this process involves a more organized analysis of data and review of documentation.

A121 Review Job Requirements

There is no explicit step to determine the performance requirements of a notional job which may become a new specialty as result of restructuring existing AFSs. However, determining these requirements is necessary to create the context in which "problems" with existing AFSs are identified. Whether this definition occurs as an

explicit or implicit step, the focus on "problems" in the Air Force structuring process means that an understanding of the job requirements is developed at the beginning of the process.

A122 Perform Career Field Front-End Analysis

Job performance is reviewed in relation to the requirements for the specialty. This review aims to identify what is working well and what shortfalls exist. Shortfalls are reviewed to assess their significance in relation to overall job performance. Job performance is reviewed in relation to AFM 36-2108 job descriptions, current training standards, United States Air Force (USAF) and MAJCOM JQSSs, and occupational survey reports and training extracts; performance is also reviewed based on unit experience as reported by SMEs and MAJCOM representatives. The aim is to confirm and assess the job performance problems that were the catalyst for the restructuring effort in the first place (See A111).

A123 Identify Job Performance Issues

Based on the review of current job performance, issues pertaining to job performance are identified. These issues may relate to duplication of tasks, job performance difficulty, training difficulty, career field progression, and personnel utilization, among others. Some of these issues may be reflected in occupational survey data that corroborate field reports.

A124 Prioritize Specialty Structure Problems

A final step in reviewing the existing job and identifying problems is to prioritize the problems in terms of their seriousness by examining the job performance and training issues identified in A123. Which problems must be addressed most urgently? Which ones are most important to resolve through specialty structure changes? This process results in a prioritized list of problems that needs to be addressed through specialty structuring.

A13 Develop Alternative AFS Options

Having identified and prioritized problems related to job performance and training, ways to modify existing AFSs are formulated. Basic options for restructuring the current AFSs are determined, i.e.,

modifying (adding or removing) core tasks of existing AFSs, combining two or more AFSs, recasting specialties in terms of different mixes of core tasks, adding SEIs, prefixes, or shreds, etc. In addition, the alternative approaches are usually prioritized in an order reflecting which options might most effectively address the current and future job performance and training problems. This process generally occurs within the framework of the R&TW.

A131 Identify Alternative AFS Options

In view of the problems already identified, options are developed for restructuring the current AFSs in order to eliminate the problems. Among the options that are considered are: modifying (adding or removing) or reassigning core tasks of existing AFSs, combining two or more AFSs, recasting specialties in terms of different mixes of core tasks, adding SEIs, prefixes, or shreds. A list of options is developed.

A132 Prioritize Alternative Approaches

Based on the descriptions of the alternative approaches and considerations of how each may resolve the problems, they are rank ordered in terms of which options appear most promising. In determining the ranking, consideration is given to the advantages, the difficulties, and potential management actions associated with each option. A determination is then made with regard to which options should be investigated further (the "preferred" options).

A14 Determine "Best" Alternative AFS Design

The purpose of this step is to determine the "best" option for restructuring the AFSs under review. This determination is accomplished based on an analysis of the personnel and training impacts of the various "preferred" options as well as an assessment of the best ways to reduce any negative impacts.

A141 Assess Personnel Impacts of "Preferred" AFS Restructuring Options

For the "preferred" AFS restructuring options, personnel impacts are identified and assessed. Among the areas of consideration are the following:

- Current USAF personnel needs

- Personnel utilization/combat capability
- Aptitude requirements
- Physical abilities and characteristics
- Reducing the number of AFSSs
- Self-sustaining AFS population
- Career Development Course (CDC)/Specialty Knowledge Test (SKT) development
- Authorizations
- Grade structure
- Promotions and career progression
- Recruiting
- Classification
- Assignment constraints
- Separation/retirement
- Geographic assignment mix
- CONUS/overseas assignment ratio
- Job enrichment/knowledge expansion
- Management broadening for 9-level and Chief Enlisted Manager (CEM)
- Compatibility with future technology and Air Force plans
- Role of women.

Both positive and negative personnel impacts of each option are identified.

A142 Assess Training Impacts of "Preferred" AFS Restructuring Options

Each "preferred" AFS restructuring option is evaluated in terms of its training impacts. Among the areas of consideration are the following:

- Current USAF training needs
- Future changes in training resources
- Training costs (length of training)
- Training burden on individual/unit
- TPR size
- Schoolhouse size
- Smooth TPR and AETC course flow.

Both positive and negative training impacts of each option are identified.

A143 Assess Other Impacts of "Preferred" AFS Restructuring Options

Each AFS restructuring option is evaluated in terms of impacts other than personnel and training. The impact on Air Force missions and requirements is considered. Also the effect on the Air Force Reserve (AFRES) and the Air National Guard (ANG) is another critical area. Among other

considerations might be interservice issues, equipment and/or tool changes, other workplace changes, and accreditation issues. Both positive and negative impacts are identified.

A144 Select "Best" Alternative AFS Option

Based on the impact analysis, one of the options is selected as "best". Effort is made to arrive at a choice which will be supported by all interested parties. In selecting the "best" option, consideration is given to the best way to meet the job requirement. Many personnel, training, and other factors are weighed. The weighting of the different factors varies from one restructuring to another depending upon the issues being addressed and the prevailing circumstances. The choice of the "best" option is made by weighing the various factors and arriving at a collective judgement with respect to which option offers the best approach. Actions that may be taken to reduce any negative impacts uncovered as part of the impact analysis are identified. The "best" alternative becomes the subject of a request for restructuring the current AFSs. In the event that a "best" option cannot be determined after these assessments, the shortfalls associated with the option are identified and additional AFS options may be identified and considered.

A15 Document Request for AFS Restructuring

In order to advance an AFS structuring proposal through the Air Force specialty classification system, an AFS change request is prepared in accordance with the guidance provided in AFM 36-2108. The request provides a brief description of the proposed change, the rationale, revised description of duties and tasks, evaluation of training requirements, detailed summary of manpower and personnel impacts, and recommendations for conducting occupational surveys.

A151 Summarize AFS Restructuring and Justification/Rationale

A brief description of the proposed changes in the specialty structure is prepared. This shows the relationship of the changes to the existing classification structure. Also, the rationale for the proposed changes is explained. In accordance with AFM 36-2108, this documents the reasons why the existing classification structure

is inadequate and provides a full justification for the change request.

A152 Document Changes to Specialty Qualification Standards

Changes to the personnel qualification standards for the proposed AFS(s) are documented. These qualifications may include changes to MAGE scores, education, experience, and physical demands (PULHES), among others. The qualifications may be identified as mandatory or desirable.

A153 Describe Impacts and Areas of Concern

The results of the impact analysis are documented. This discusses all considerations examined in developing the change proposal, both the pros and cons. The most significant impacts supporting the change are identified as are those impacts that are least supportive. Areas of concern are also documented; these are issues that bear on the potential success of the changes in meeting the job requirements and addressing the original problems. These statements reflect concerns for the using commands as well as the Air Force as a whole.

A154 Prepare Revised AFM 36-2108 Description

A revised specialty description, consistent with the AFM 36-2108 format, is prepared. This usually consists of three parts. First, there is a summary of the specialty's duties and responsibilities. Second, there is a more detailed description of duties and responsibilities; major tasks, equipment, special tools, and materials are identified. Third, there are details regarding specialty qualifications including knowledge, education, training, experience, and other requirements for performing the duties and tasks of the specialty. Changes in the description from the original are noted for ease of reference during the review process. Under AFR 39-1, this description distinguished among requirements at each skill level; more recent guidance simply documents these specialty characteristics in a more generic fashion leaving skill level detail for the CFETP.

A155 Assemble Request for AFS Restructuring

The documentation describing the AFS restructuring, its rationale, changes to qualification standards, impacts and areas of concern as well as the revised specialty description are assembled into a request for AFS restructuring. This is prepared in accordance with requirements set forth in AFM 36-2108.

A156 Formulate Transition Plan

Once the decision is made regarding the "best" option, a transition plan is formulated. This plan identifies milestones and action offices of primary responsibility (OPRs). There is a complete transition training plan identifying AETC, MAJCOM, and unit tasks. The aim is to provide a smooth transition, facilitate training, and minimize impacts on personnel and units as the changes are formalized and become effective.

A16 Develop AFS Training Plan

In January 1992, the Air Force Chief of Staff targeted Air Force education and training programs for a thorough review in his Year of Training initiative. The objective was to establish a coherent architecture for education and training to improve the quality of education and training programs. The CFETP is the core education and training document for a specialty. It establishes the framework for managing career field education and training. Creation of the CFETP is the focal point of U&TWs; in the context of R&TWs, the plan is an important product along with the AFS change proposal.

A161 Define Training Requirement

An initial step in developing the CFETP is defining the training requirement. The starting point is an examination of the current 3-level technical school training to determine revisions necessary to meet requirements of the new specialties. Once the 3-level course requirements are determined, requirements for 5- and 7-level training and career development courses are also determined.

A162 Develop Training Course Outlines

Based on the training requirements, outlines are developed for new and revised AFS awarding

courses at the 3-level and CDCs at the 5- and 7-level. The outlines identify course content and approximate hours in reference to core tasks. In addition, content for supplemental and exportable courses as well as transition training is also identified.

A163 Revise Specialty Training Standards

If STSS exist for the AFSs being restructured or if "strawman" STSS exist, these are reviewed and revised based on the new set of duties and tasks. Tasks, knowledge, and technical references for the revised AFSs are determined and listed in standard STS format. Behavioral objectives and qualitative requirements are identified for the 3-level course, 5- and 7-level career development courses, and the 7-level course, as appropriate.

A164 Draft CFETP

Based on the analysis of training requirements and the development of the STS, a strawman CFETP, consisting of two parts, is prepared. The first part documents general background information, career field progression and information, definition of skill level training, and resource constraints. Part II contains the training course index listing the AF JQS and Job Qualification Test (JQT) packages, Air Force Engineering and Technical Services (AFETS) training, and the specialty training standard. During the R&TW, the strawman CFETP is reviewed, modifications are made as necessary, and a final version of the CFETP is prepared.

A2 Staff Request for AFS Restructuring

"Staff Request for AFS Restructuring" is the second major process involved in developing new or modified AFSs. Its purpose is to make certain the AFS change proposal meets Air Force regulatory and policy requirements and to circulate the request among approving authorities for their acceptance. There are four steps included in this process: reviewing the AFS change request for its conformance to AFM 36-2108, preparing a staffing package, the staffing itself, and resolving any objections arising out of the review process. AFMPC/DPMYMC has primary responsibility for executing the steps in this process. In addition, the Air Staff, the AFCFM, as well as others, participate in the review, approval, and coordination of the restructuring. Since most of the coordinating agencies, if not all, have participated in the R&TW through their representatives who

approved the change request, this coordination process generally proceeds without further changes being made.

A21 Review Request for AFS Restructuring

The AFS change request, when received by AFMPC, must be reviewed for completeness and conformance with requirements of AFM 36-2108. To facilitate this review process, AFMPC uses its "Change Proposal Checklist". Among the principal sets of information that are checked are the following:

- Transmittal letter with coordinating agencies identified
- Proposal memorandum for the record summarizing the main features of the change including MPT impacts, areas of concern, revised AFM 36-2108 description, change summary and conversion guide (CS/CG).

If required items are not included in the change request, the initiating party is contacted to provide the missing material.

A22 Prepare/Conform Proposal for Staffing

AFMPC prepares the coordination package for distribution among the reviewing agencies. The package includes a cover letter identifying the changes and requesting coordination and approval, a summary of the proposed change, the CS/CG, and the revised AFM 36-2108 description.

A23 Staff AFS Restructuring Proposal for Approval

The complete AFS restructuring proposal is distributed for review and approval. Principal agencies participating in the review include the Air Staff, the AFCFM, AETC, and AFMPC. All parties review the proposed changes and determine if the best interests of the Air Force and their organization will be met. The coordination occurs usually over a 30 day period, although the time period may be longer or shorter depending upon the circumstances.

A24 Coordinate Additional Changes

If problems are identified during the staffing, appropriate changes are negotiated between the disputing party, the initiating agency, and AFMPC. If the change has material impact on the AFS restructuring proposal from the perspective of other Air Force agencies, the revised package is distributed again for

coordination.

Inputs, Controls, Outputs, and Mechanisms (ICOMs)

Associated with each procedure are inputs, controls, outputs, and mechanisms. In the context of IDEF modeling, each of these attributes has a distinct purpose. An "input" is something transformed by an activity. An "output" is something that is produced by or results from an activity. A "control" is something that determines how or when an activity occurs, but is not transformed by it. A "mechanism" is a person, facility, machine or agency that performs the activity.

Inputs

There are three major sets of inputs into the job structuring process: current AFSs; job performance, and job characteristics.

Current AFSs. "Current AFSs" exist in the form of descriptions of the specialty's duties and responsibilities, major tasks, equipment, special tools, and materials as well as details regarding specialty qualifications including knowledge, education, training, experience, and other requirements. This information has generally been documented in the AFR 39-1 specialty descriptions and, based on the current revisions to the Air Force's system of regulations and instructions, will be available from the CFETP.

Job performance. "Job performance" data are related to the way in which the job is presently being performed. These data include field observations by SMEs who identify AFS restructuring needs based on current job performance, training, and/or changes in equipment and technology. The data also indicate task difficulty and training emphasis (usually provided by OMS in the form of a Training Extract), career field progression, and personnel utilization, among other data pertaining to job performance.

Job characteristics. "Job characteristics" data include all the manpower, personnel, and training data that are not performance related and characterize the AFSs being restructured. Included are force structure, authorizations, unit manning, grade structure, aptitude requirements, physical abilities and characteristics, JQSS, STSS, CTSS, and POIs, among others.

Controls

There are four major sets of controls that influence the way in which AFSs are created and restructured. Some, namely job requirements and airman attributes, bear directly on the specific decisions involved in establishing the need for restructuring and developing alternative AFS structures. Others, namely Air Force

policy and force structure, are established as matters of HQ USAF policy and have significance well beyond issues of AFS structuring.

Job requirements. This control identifies the job or jobs that must be performed in order to meet specific mission requirements. Current AFSs are evaluated against the "job requirement" standard in order to determine if and what shortfalls exist and to establish how existing AFSs must be modified in order for the job requirement to be met. The "job requirement" serves as a point of reference when restructuring existing AFSs. The "job requirement" usually encompasses a statement of mission, levels of performance, e.g., sortie rates, etc., physical demands (PULHES), and an enumeration of duties and tasks that the job holder must be able to perform.

Airman attributes. "Airman attributes" are those characteristics that are inherent in the pool of people available to be assigned AFSs and perform effectively in the prescribed job. These attributes are represented by airman aptitudes and physical abilities, among other key attributes.

Air Force policy. Air Force regulations and instructions establish what AFSs are and how they can be changed. Currently, AFR 35-1 and AFR 39-1 are the most significant with respect to AFS restructuring. The former establishes overall Air Force classification policy and the latter specifically describes airman specialties and procedures for their change. These regulations are in the process of being changed to an instruction, AFI 36-2101, and a manual, AFM 36-2108, respectively. These changes will not significantly alter the theme of these regulations; however, much of the detailed description of airman specialties will no longer be included in the instruction but documented in the CFETP.

Force structure. "Force structure" identifies the authorized endstrength of the Air Force and the way in which its people are distributed into major commands and organized in subordinate units. Unit manning documents detail the specific positions within performing work centers. There may be instances where AFS restructurings drive changes in force structure in which case reclassifying force structure as an input to the restructuring process may be appropriate. However, generally speaking, force structure is established and controls AFS structure decisions.

Outputs

There are three major sets of outputs from the job structuring design process: revised or new AFSs approved for implementation, revised or new CFETPs, and a transition plan. The first is the focus of attention in this effort. The second is the major product of a training planning effort. And, the third establishes the milestones and responsibilities for

restructuring the AFSs.

Revised/new AFSs (Approved for implementation). A revised or new specialty description, consistent with the format of AFM 36-2108, is prepared. This includes a summary of the specialty's duties and responsibilities, a detailed description of major tasks, and details regarding specialty qualifications.

Revised/new CFETPs. A revised or new CFETP is also prepared. This consists of two parts, one documenting general background information and the other providing training detail. The CFETP is used by the training community to revise or develop courses and related training associated with the new AFS.

Transition plan. The transition plan identifies milestones and action OPRs for the steps required for formalizing an AFS restructuring in the Air Force's classification system. The plan lays out the steps to be followed in the third major activity in an AFS restructuring. Its activities should provide a smooth transition, facilitate transition training, and minimize impacts on personnel and units. When the transition steps have been completed, the revised AFSs are formally published in AFM 36-2108.

Mechanisms

There are six sets of mechanisms, which in the case of this description, represent Air Force offices and agencies that play roles in the AFS restructuring design process. These include the AFCFM, the MAJCOM functional managers, unit level SMEs, AFMPC, HQ USAF, and others. These parties may work together within the forum of an AFS R&TW to redesign one or more AFSs or any one of them may act as the catalyst to initiate an AFS change. Most frequently, however, the changes are initiated by the AFCFM or the MAJCOM functional managers. AFMPC is always the party responsible for formal implementation of the change in AFM 36-2108.

AFCFM. The career field manager has responsibility, among others, to monitor the "health" of the enlisted AFSs within his/her career areas. The career field managers for aircraft maintenance, communications-electronics maintenance, and medical each oversee 20-40 AFSs. In most other instances, the career field manager is responsible for only a few. The managers are continuously talking with senior enlisted personnel in the field soliciting information on how well-established specialties are performing. When information from the field suggests that significant problems exist, the career field manager may initiate a restructuring effort. Besides feedback from the field, changes in USAF policy or the introduction of new equipment or technology may also lead the career field manager to initiate an AFS restructuring effort. Once initiated, the AFCFM is a key participant leading the analysis and decision-making that result

in AFS change proposals.

MAJCOM functional managers. At the MAJCOMs, there are functional managers who are the counterparts to the AFCFM. The functional managers have responsibility for AFSs within the MAJCOM and monitor the needs and problems that may arise. The functional managers advise the AFCFM, who solicits their input regarding the health and status of AFSs. If AFS problems occur within a MAJCOM, the functional manager notifies the AFCFM of the circumstances and potential restructuring needs. If a restructuring effort is initiated, the functional managers participate in the analysis and decision-making leading to revised AFSs.

Unit level SMEs. Senior enlisted personnel within operational units are a major source of information concerning AFS job performance. They may be contacted by the AFCFM for information or they may advise the AFCFM of job performance problems. The AFCFM may invite selected personnel to participate as SMEs at R&TWs.

AFMPC. As the office of primary responsibility for AFM 36-2108, AFMPC is the agency responsible for staffing and formalizing proposed AFS changes. Where the AFCFM has a focus on analyzing the needs for restructuring and designing revised specialty structures, AFMPC has the major procedural responsibility for obtaining approval and publishing the revised specialties as part of AFM 36-2108.

HQ USAF. Whenever AFSs are being restructured and formal proposals have been developed, Air Staff agencies, whose interests may be affected, review and approve the changes. Usually, the personnel, training, and logistics communities are involved in this staffing. Others such as medical may also participate depending upon the specific AFS structuring proposals.

Others. There are many other Air Force agencies that may be involved in the process. For example, OMS through its Occupational Survey Program makes its data available, usually in the form of training extracts and occupational survey reports (OSRs). ANG and AFRES will participate when specialty structuring issues affect their interests as well. Armstrong Laboratory and AETC may also be involved when their specialized expertise is required. The latter faces an expanded role as do other agencies, such as the Air Force Management Engineering Agency (AFMEA), once a proposal for restructuring an AFS has been approved and implementation of the change begins.

Analytical Methods and Models

Introduction

There are six Air Force analytical methods or models that have been developed or are under research and development that may be used to support the job design process occurring in the course of an AFS restructuring. With the exception of one model that is currently under development, these have been developed to meet analytical needs other than job design, such as acquisition or logistics planning, among others. However, they could be used on occasion to support the job design process as well.

This section describes the six analytical methods. These include:

- Aptitude Standard Setting Methods (ASSM)
- Comprehensive Occupational Data Analysis Program (CODAP)
- Logistics Composite Model (LCOM)
- Prototype Job Structuring Decision Aid (JSDA)
- Prototype Manpower, Personnel, and Training Decision Support System (MPT DSS)
- Training Impact Decision System (TIDES).

Each is described in terms of an overview, its purpose, users, office of primary responsibility, methodology, user documentation, outputs, computer requirements, data requirements, status, and applicability to job structure design. Figure 2 identifies the steps in the job design process where these various methods may have or have had application.

Aptitude Standard Setting Methods (ASSM)

Overview. Associated with each AFS is a minimum aptitude requirement. This is comprised of a minimum score for one or more aptitude areas. In the Air Force, the aptitude areas are mechanical, administrative, general, and electronic (MAGE), which are composites of ASVAB scores. Selecting the area is generally not difficult; however, determining an aptitude cutoff score is.

While no model has been formalized for routine application by personnel analysts in the field, AL/HR has undertaken research for many years aimed at developing methods and aids facilitating the determination of minimum aptitude scores. This research has encompassed a variety of related areas including analyses of job performance, learning difficulty, and productive capacity in relationship to minimum aptitude requirements. Data obtained through the Air Force's occupational survey program have played a critical role in much of this work.

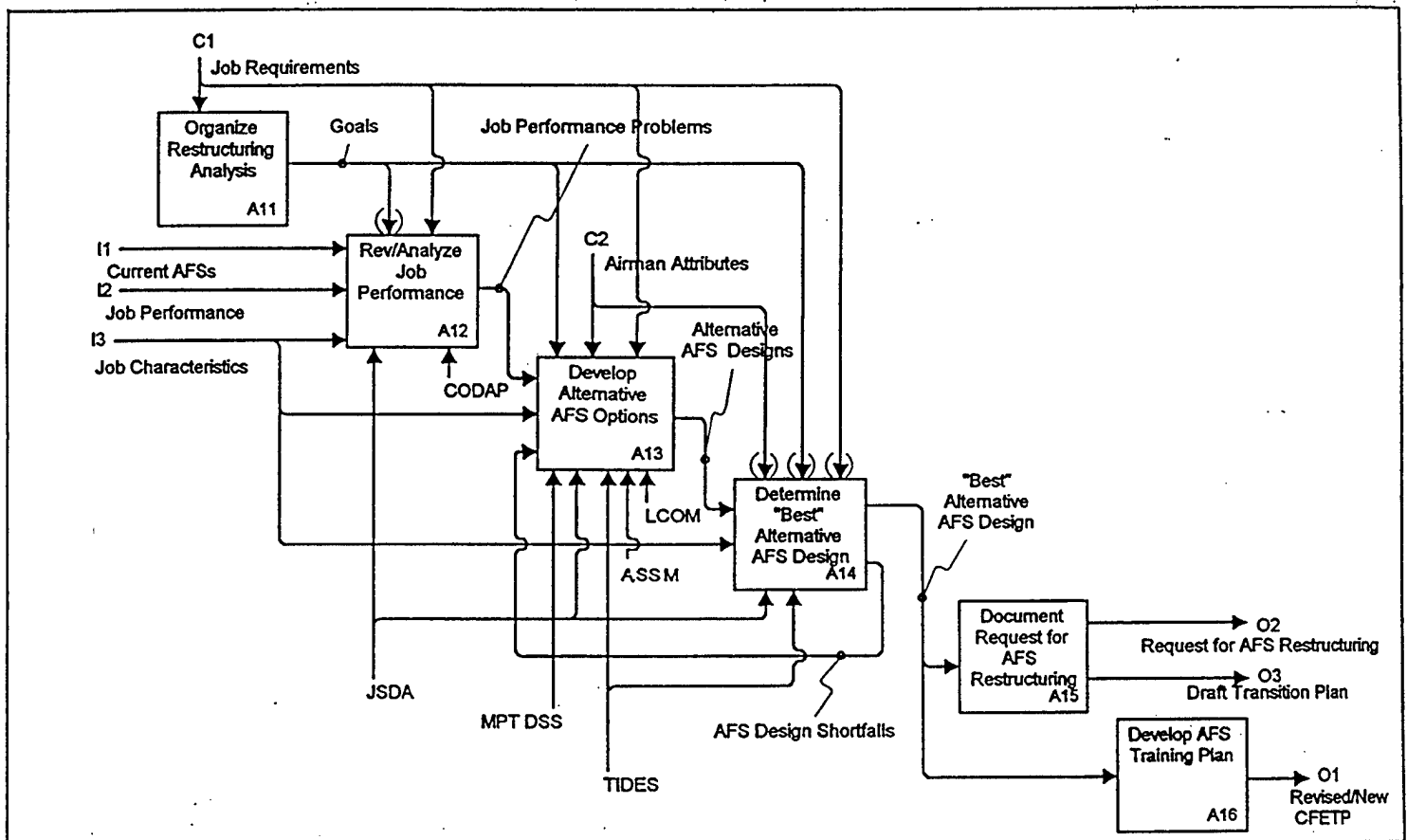


Figure 2. Application of analytical methods in the job structuring design process (IDEF Node A1: Develop Request for AFS Restructuring).

At this time, techniques derived from this research can be used to assess and consider the consistency of the alignment of occupations in terms of their aptitude requirements. This is accomplished through estimates of the occupational learning difficulty for AFSs based on occupational survey data. More difficult specialties should have higher aptitude requirements. While assigning an aptitude cutoff score continues to be a judgmental process, AL/HR's research to date provides a means to align occupations in terms of their difficulty and examine the consistency of their aptitude requirements.

When issues related to aptitude scores are raised in an AFS restructuring, the AFCFM and others will sometimes turn to AL/HR scientists for assistance. Working together, the scientists have utilized their body of research to provide guidance with respect to aptitude requirements.

Purpose. The purpose of these methods is to provide guidance for selecting aptitude scores. These methods support the comparative analysis of aptitude cutoff scores and learning difficulty as a basis for assessing the consistency of aptitude requirements among various AFSs.

Users. Since these methods presently are embedded in on-going research, the direct users are AL/HR scientists. However, the AFCFM and others engaged in AFS restructuring generally recognize the need for developing aptitude-related data and initiate any collaboration with AL/HR scientists that might occur.

Office of primary responsibility. AL/HR.

Methodology. AL/HR's approach to assessing the consistency of aptitude requirements is based on three research constructs. First, estimates are made of the learning difficulty of AFS tasks based on the time needed to learn to perform such tasks; the more time needed to learn a task the more difficult the task is assumed to be. Second, the learning difficulty and aptitude cutoff score for a series of AFSs are plotted to portray their relationships. Third, a determination is made of the learning difficulty that may be associated with the restructured AFSs; this is used to position the AFS on the plot aligning it with other AFSs and providing a means for determining an aptitude requirement that is consistent.

User documentation. No user documentation exists. There are many research reports documenting various phases of this research over the past twenty years. Most important of these are the following:

Maginnis, E.B., Uchima, A., Smith, C.E. (1975).

Establishing aptitude requirements for Air Force jobs:
Historical review of aptitude levels and impact on
personnel system (AFHRL-TR-75-44(I)). Brooks AFB, TX:

Air Force Human Resources Laboratory.

Maginnis, E.B., Uchima, A., Smith, C.E. (1975).
Establishing aptitude requirements for Air Force jobs:
Some personnel system actions to offset negative
impacts of aptitude changes (AFHRL-TR-75-44(II)).
Brooks AFB, TX: Air Force Human Resources Laboratory.

Maginnis, E.B., Uchima, A., Smith, C.E. (1975).
Establishing aptitude requirements for Air Force jobs:
Methodological approaches (AFHRL-TR-75-44(III)).
Brooks AFB, TX: Air Force Human Resources Laboratory.

Weeks, J. (1984). Occupational learning difficulty: a
standard for determining the order of aptitude
requirement minimums. (AFHRL-SR-84-26). Brooks AFB,
TX: Air Force Human Resources Laboratory.

Leighton, D.L., Kageff, L.L., Mosher, G.P., Gribben, M.A.,
Faneuff, R.S., Demetriades, E.T., & Skinner, M.J.
(1992). Measurement of productive capacity: a
methodology for Air Force enlisted specialties (AL-TP-
1992-0029). Brooks AFB, TX: Armstrong Laboratory.

Outputs. These methods produce a framework in terms of the alignment of AFS aptitude requirements based on learning difficulty. The analyst may use this framework as a basis for estimating the aptitude requirements of a new AFS provided estimates of its learning difficulty can be made.

Computer requirements. Not applicable.

Data requirements. These methods depend on learning difficulty data that generally are obtained through occupational surveys.

Status. AL/HR's work in standard setting is on-going. Its technology for aligning AFS aptitude requirements based on learning difficulty is functional; recent efforts have been initiated to update these methods. Research is also continuing to develop methods that go beyond aptitude alignment and support the determination of aptitude cutoff scores.

Applicability to job structure design. As a method for considering the consistency of aptitude requirements among existing and restructured AFSs, the AL/HR standard setting methods based on occupational learning difficulty can be useful when AFSs are being restructured. They permit the analyst to compare the aptitude scores of existing AFSs as well as restructured AFSs and, in a systematic manner, assess the consistency of their aptitude requirements.

Primary source(s) of information. The research reports identified under "User Documentation" above were the primary sources of information used in preparing this summary. In addition, the following reference was used.

Driskill, W. (1994). White paper: Tailoring occupational learning difficulty indices for existing and restructured Air Force specialties. San Antonio, TX: Metrica, Inc.

Comprehensive Occupational Data Analysis Program (CODAP)

Overview. CODAP, the product of Air Force research initiated in the 1950s, is a set of computer programs designed to organize, analyze, and report data acquired through occupational surveys. It is the data processing and analysis capability that makes raw survey data acquired through the Air Force's occupational survey program useful for personnel and training planning purposes. Among its many capabilities, the programs can be used to tabulate survey data, sequence data by such factors as percentage of airmen performing tasks, compare specialty characteristics, or analyze task co-performance. CODAP users know from experience that these programs provide a powerful analytical capability.

Purpose. The purpose of CODAP is to process occupational survey data so that they can be used to establish, validate, and adjust training programs, refine and maintain occupational structures, and to justify or change other personnel policies and programs.

Users. The primary CODAP users are OMS occupational analysts, who work with the ultimate users of the occupational survey data to produce analytical reports supporting the users' needs such as training planning, job structuring, personnel policy development, and personnel test development, among others. In addition, AL/HR research scientists represent a second group of users; their primary interest focuses on applications of CODAP to develop occupational survey data for use in research and other analytical models.

Office of primary responsibility. USAF Occupational Measurement Squadron, Air Education and Training Command.

Methodology. CODAP is comprised of more than 100 general purpose programs designed to process and analyze occupational survey data. There are eight basic types: data quality control, sample identification and selection, individual and summary report, individual and group comparison, task factor and task module, cluster analysis, statistical analysis, and interactive programs. Among the more commonly used programs are the following four: PRTJOB, PRTMOD, VARSUM, PRTFAC.

PRTJOB prints a job description for any desired group of job incumbents. The job description is an ordered list of task or

duty statements. The percentage of the members in the group who perform each task or duty, and the average percentage of an incumbent's time that is spent performing the task or duty is listed with each statement.

PRTMOD displays occupational survey data in a variety of ways including in job inventory order (by duty), in STS order, and POI order. Included in PRTMOD data are usually the percentage of group members who are performing the tasks listed in the report as well as task factors such as training emphasis, task difficulty, or automated training indicator.

VARSUM provides responses of career ladder incumbents to the various background questions in the job inventory. The data are identified by groups of respondents.

PRTFAC is very similar to the PRTMOD displaying percentages of people performing tasks as well as training emphasis, task difficulty, and automated training indicator data. However, the PRTFAC report is used to display task data in descending order of some task factor such as training emphasis.

Data developed using these programs are most commonly found in the training extracts provided to R&TWs. However, CODAP's capabilities extend far beyond these basic four programs. Of particular relevance to job structuring are the CODAP programs supporting analysis of task clustering and co-performance. Various MPT analytical methods including the job structuring decision aid, MPT DSS, and TIDES use task modules (clusters) as a principal analytical construct.

User documentation.

USAFOMS/OMYO (1993). Occupational Analyst Handbook.
Randolph AFB, TX.

Outputs. Among the many outputs possible using CODAP, two bear most directly on the job structuring design process: the training extract and the occupational survey report. (Descriptions of these data may be found under the discussion of "Job Structuring Databases").

Computer requirements. Current versions of CODAP are written to operate on mainframe computers, reduced instruction set computing (RISC) systems, and microcomputers.

Data requirements. CODAP processes data that are collected as part of OMS's occupational survey program. Most AFSs, by policy (AFI 36-2623), are surveyed every five years; however, surveys may occur more frequently if more current data for an AFS are needed. The survey data are processed using CODAP.

Status. CODAP is fully operational. As needs arise, CODAP

capabilities are enhanced to increase the utility of CODAP for specific AL/HR and OMS projects.

Applicability to job structure design. CODAP has been and can be used to support the job structure design process both directly and indirectly. Its direct use is represented by occupational survey reports and training extracts, which serve as key data resources during restructure and utilization (R&TW) workshops. Data developed using CODAP are or will be used in job performance measurement methods, the prototype job structuring decision aid, MPT DSS, and TIDES, among others.

Primary source(s) of information. In addition to the OMS handbook cited above, other references include:

Weissmuller, J., Tartell, J.S., & Phalen, W.J. (1988). Introduction to operational ASCII CODAP: an overview. Symposium on new ASCII CODAP technology for manpower, personnel, and training applications. 30th Annual Conference of the Military Testing Association.

Driskill, W.E., Boyle, E., & Garcia, S.K., (1986). Task identification and evaluation system (TIES). Contract No. F33615-83-C-0030, San Antonio, TX: The Maxima Corporation.

Various training extracts, occupational survey reports, and internal files.

Logistics Composite Model (LCOM)

Overview. LCOM is a large-scale computer simulation model incorporating Monte Carlo techniques and used by the Air Force to simulate provisioning, depot maintenance, organizational, and intermediate maintenance requirements associated with aircraft operation and maintenance functions. ACC/XPMEL is currently the major user of LCOM; other users include Air Mobility Command (AMC), Air Force Materiel Command (AFMC), and Air Force Special Operations Command (AFSOC). Active LCOM databases exist for the A-10, F-16, F-15, F-117, and F-111; B-1 and B-52 databases also exist.

LCOM is most frequently used to evaluate alternative maintenance structures and manpower. The model can also be used, however, to address job design issues. In these instances, LCOM's maintenance networks are related to AFS task structures. LCOM is then used to model the performance characteristics of particular AFSs based on the maintenance tasks being performed.

Purpose. The original purpose of LCOM was to study the effects of various maintenance planning factors on sortie generation. However, because of its flexibility, it has become an important tool for estimating maintenance manpower requirements. By using

its simulation capabilities, LCOM can be used to assess the effects on maintenance manpower and sortie generation of alternative maintenance organizations and processes.

Users. MAJCOM manpower planners.

Office of primary responsibility. AFMEA/MEIL.

Methodology. An LCOM application is based on simulating the maintenance task network associated with an aircraft system. The task network is usually modeled in terms of work unit codes (WUCs). Through analysis of Maintenance Data Collection (MDC) system data and operational audits, factors related to failure rates, resources, and repair times, among others, are developed for WUCs. Through this process, the maintenance task network is built.

A second set of data required for building an LCOM is the operations scenario; this includes the logic of the operation and any rules or constraints. In addition, supply data identifying resource type, cost, authorization, valid substitutes, failure rates, among others, may also be required.

These data are assembled into a simulation model using the LCOM input module. Once this structure is built, the analyst can simulate the operational scenario using LCOM's main processing module. Individual aircraft are preflighted, loaded with munitions, taxied, flown, recovered, and maintained. Maintenance is divided into scheduled, unscheduled, and phase (periodic inspection). The simulation tracks the number of personnel and physical resources.

User documentation.

AFM 171-605, LCOM User's Manual.

Outputs. Using LCOM's post processor modules, statistics describing the simulated operations are put in a format useful for decision making. The output includes a wide variety of data such as manpower utilization rates by AFS, sortie capability, and supply requirements. By changing the variables describing the maintenance networks, the operational scenario, or the supply data, a wide-range of "what if" questions can be addressed.

Computer requirements. LCOM runs on Hewlett-Packard, SUN, and VAX computers.

Data requirements. The principal data used by LCOM are maintenance task networks developed from MDC data and operational audits, operation scenarios, and resource supply data.

Status. Operational.

Applicability to job structure design. LCOM has been used to support Air Force job restructuring efforts. For example, it was used during Rivet Workforce to help identify ways to restructure aircraft maintenance AFSSs. However, requirements for building LCOM databases for running simulations are not usually consistent with the resource and time constraints involved with the scope of more typical job restructuring efforts where fewer AFSSs are being addressed. Consequently, while an LCOM simulation can be built to model almost any job structure, if a current LCOM database related to AFSSs being restructured does not already exist (meaning, aircraft maintenance AFSSs), use of LCOM is very unlikely.

Primary source(s) of information.

Boyle, E. (1990). LCOM explained. Interim technical paper, AFHRL-TP-90-58. Brooks AFB, TX: Air Force Human Resources Laboratory.

Driskill, W.E., Boyle, E., & Garcia, S.K. (1986). Task identification and evaluation system (TIES). Contract No. F33615-83-C-0030, San Antonio, TX: The Maxima Corporation.

Internal records and notes.

Prototype Job Structuring Decision Aid (JSDA)

Overview. In December 1993, AL/HR initiated the development of a prototype Job Structuring Decision Aid. This research was initiated in order to provide a capability to assist Air Force personnel planners in designing jobs that can meet future changing requirements. Among the changes leading to AFS restructuring are technological evolution, new deployment concepts, force downsizing, and organizational and mission changes. The job aid is being designed to provide Air Force planners with a complete, fully functional system for addressing AFS structuring issues. This effort is scheduled to be conducted over a two year period, finishing in September 1996.

Purpose. The decision aid is being designed to: (1) evaluate proposals for change to existing Air Force job structures, and (2) proactively design job structures for future conditions.

Users. At this early stage of research into the decision aid, user characteristics and needs have not been formulated with specificity. Potential users, however, include AFCFMs and supporting analysts. In addition, the decision aid may be suitable for use by analysts at AFMPC, AFMEA, and OMS.

Office of primary responsibility. AL/HR.

Methodology. The concept for the decision aid is based on five

subsystems which implement a life cycle perspective for job structuring. The life cycle begins with the notion of a specific "mission concept" and flows from there through various refinement phases (subsystems) until returning full circle to pick up changes and redirections. The five subsystems implement a stepwise refinement process from mission concept to mission requirements to proposed job structure to training pipelines to manpower assessments and, finally, overall Air Force impact (and cost) assessments to gauge the ease of transition.

The five subsystems which will implement this job structuring approach include the following.

Job/Mission Requirements Subsystem (JMRS): Defines Air Force jobs in a manner such that essential, core or critical tasks can be readily tied to mission-level objectives with necessary support needs automatically linked.

Structural Opportunities Evaluation Subsystem (SOES): Characterizes Air Force jobs in a manner such that restructuring (i.e., transitions from an older set of jobs to a newer set of jobs) opportunities can be automatically identified based on a "goodness of fit" measure and, where adopted, can proceed according to defensible and clearly rational grounds.

Training Requirements Evaluation Subsystem (TRES): Assesses the present training requirements (learning load) of current Air Force jobs in a manner such that restructuring opportunities can be evaluated on how well they maintain or "mix and match" job components from various training streams and how the mix of student aptitude levels is likely to change.

Manpower Requirements Evaluation Subsystem (MRES): Assesses the present manpower requirements (allocated slots) of current Air Force jobs in a manner such that restructuring opportunities can be evaluated on how well they maintain or "mix and match" job components from various manpower categories.

Integration & Trade-off Evaluation Subsystem (ITOES): Facilitates interactive variations within the four subsystems to assess overall impact on the Air Force.

Functioning together, the purpose of these subsystems is to provide the personnel analyst with job aids assisting in the design of new job structures that will meet future conditions.

User documentation. User's guides will be developed for each JSDA subsystem. These will describe the role of the subsystem in specialty structuring and explain user procedures.

Outputs. Based on the concepts for the job aid, the system will provide:

Metrics to gauge ease of transition under various scenarios.

Outputs which flow into other systems designed to model operational requirements (TIDES, LCOM, etc.)

Audit trails for backward references to training and testing materials.

Computer requirements. The job aid will operate in a PC environment. However, no specifications exist at this time.

Data requirements. Specifications for data have not been formalized.

Status. Prototype capabilities are scheduled to be available for testing in FY 1996.

Applicability to job structure design. The prototype Job Structuring Decision Aid is being developed specifically to support the AFS restructuring process.

Primary source(s) of information. This description of the prototype Job Structuring Decision Aid is based on:

U.S Air Force, AL/HRMJ (1993). "Prototype Job Structuring Decision Aid, Metrica, Inc. Research Contract Project Summary".

Prototype Manpower, Personnel, and Training Decision Support System (MPT DSS)

Overview. The MPT DSS, for which research and development by AL/HR is scheduled for completion in FY 1996, will be the prototype of an analytical tool supporting MPT analysis throughout all phases of a weapon system acquisition. The DSS will operate as a prototype in a personal computer (PC) environment with access to local and shared databases.

The primary use of the prototype will be to assist in the determination and analysis of the MPT resources required for the maintenance and support of new or modified Air Force aircraft systems. The DSS, as presently conceived, will have, among its full range of functions, the capability to address job design issues as they pertain to the aircraft system under acquisition; its utility in AFS restructuring will depend on the extent to which the DSS's primary view of an AFS can be extended beyond the aircraft system to the Air Force at large.

Purpose. The prototype MPT DSS is being developed to demonstrate the feasibility of creating an analytical tool to assist in acquisition-related MPT planning.

Users. Users for the prototype DSS will principally include MPT analysts involved with the acquisition of new or modified aircraft systems. As part of the MPT DSS development, target audience descriptions (TADs) will be developed for each expected user. The TADs will describe the types of AFSSs expected to be held by users along with user educational background and prior experience with computers and MPT analysis, the MPT acquisition products and analyses that users produce, and the computer hardware and software resources users should have available to conduct MPT analysis.

Office of primary responsibility. AL/HR.

Methodology. The MPT DSS design concept is based on the development of an integrated database, a set of analytical methodologies or tools, and an integrating tradeoff methodology. Out of this framework, there are two analytical methodologies that may be useful in AFS restructuring. These include the following:

Personnel Aptitudes and Characteristics (PAC) Tool
Specialty Structuring (SS) Tool.

The PAC Tool will identify the skill, knowledge, and ability (SKA) requirements associated with a system's tasks and the overall aptitude requirements and learning difficulty of the jobs associated with these tasks. It will also identify the skill, knowledge, or ability similarity between AFSSs or groups of tasks.

The SS Tool will assign unit maintenance tasks to AFSSs and assess the impact of these assignments on selected measures of effectiveness related to mission generation rates and life cycle costs.

User documentation. In the course of the MPT DSS development, a user's manual will be developed. This will facilitate the user's application of the DSS to support acquisition-related MPT analysis.

Outputs. The prototype MPT DSS is expected to produce a wide range of reports supporting acquisition-related MPT planning. Of interest to AFS restructuring may be the following planned reports.

PAC Tool

Task Characteristics Report will list the task taxon assignment, SKA requirements, and task difficulty rating for each task.

Job Characteristics Report will list the job difficulty rating, percent of tasks assigned to each taxon, skills and knowledge required, mean level of ability requirements, and recommended aptitude entry-level requirements for each job.

AFS/Task Similarities Report will list the similarity between the SKA requirements of individual tasks and the overall requirements of an AFS.

SS Tool

Specialty Assignments Reports will describe the assignment of unit maintenance specialties to tasks, task clusters, jobs, and the overall system.

Specialty Assignment Impacts Reports will provide the impact of specialty assignments on the measurements of effectiveness estimated with the SS Tool.

Computer requirements. The MPT DSS is expected to be operational on an IBM-compatible PC with an 80486DX system running Windows 3.1 and a 80387 math coprocessor. Also, a video graphics array (VGA) color monitor will be needed to support the graphical user interface (GUI). The MPT DSS will require 16 Mb of random access memory (RAM) and access to 600 Mb of on-line disk storage. In addition, the system will require a modem with a minimum 9600 baud rate to extract data from external databases.

Data requirements. The scope of the MPT DSS dictates a wide range of data to support its various functions. MPT DSS data requirements that also relate to AFS structuring include: maintenance task data, current AFS inventory, AFS transition rates, AFS target strength, characteristics, and task ratings, among others. The MPT DSS design concept is based, in part, on the availability of these types of data from LCOM databases, logistics support analysis records (LSAR), maintenance data collection (MDC)/Core Automated Maintenance System (CAMS), OSR, and Headquarters Air Force Manpower Data System (HAFMDS).

Status. Prototype capabilities are scheduled to be available for field use in FY 1996.

Applicability to job structure design. For the MPT DSS to be employed in support of the job design process in AFS restructuring, its focus would have to be extended beyond individual aircraft systems to model Air Force-wide AFS impacts.

The extent to which these tools can be adapted for AFS restructuring will not be known until completion and testing of the prototype DSS; however the DSS appears to hold much promise as an aid to the job structuring process.

Primary source(s) of information. This description of the prototype MPT DSS is based on:

Dynamics Research Corporation (1992). Management Plan for the Development of a Prototype Manpower, Personnel, and Training (MPT) Decision Support System. Contract F33615-91-C-0008. Wilmington, MA.

Training Impact Decision System (TIDES)

Overview. TIDES is a computer-based decision support system designed to provide an integrated approach to training programming and planning. The system uses information about clusters of related tasks (task training modules) combined with a dynamic model of specialty training programs and job flows, along with data on unit training resources and costs, to compare training options based on alternative combinations of task training modules.

Purpose. The purpose of TIDES is to support Air Force decision makers who plan and manage training at the AFS level by modeling utilization and training patterns and identifying resources, costs, and limitations.

Users. TIDES is being designed to support AFCFMs and training managers in identifying the costs and resources associated with AFS training programs based on what task clusters within a specialty are trained, when training should occur in the career path, and where the training should be delivered, among other training features.

Office of primary responsibility. AL/HR.

Methodology. The TIDES methodology is characterized by two main features: task training modules and utilization and training flow patterns. The task training modules represent collections of similar tasks and are the principal unit around which analysis is performed. The aggregation of tasks into modules is aimed at elevating the analysis above the task level where large amounts of detail and complexity make modeling difficult and results obscure. Modeling the utilization and training flow patterns has opened the way for considering both formal classroom training as well as on-the-job training (OJT) in an integrated, explicit manner.

TIDES is structured into four subsystems: the task

characteristics subsystem, the field utilization subsystem, the resource/cost subsystem, and the integration/optimization subsystem.

The task characteristics subsystem uses occupational survey data as a starting point in the analysis of an occupational field or specialty and its training requirements. The survey data are processed to determine the extent to which various tasks are coperformed. Based on the assumption that tasks which are performed together probably share underlying skills and knowledges and therefore require similar training, task training modules are identified by this subsystem. These models become the main unit of analysis in TIDES.

The field utilization subsystem has three major functions: to describe current and alternative utilization and training patterns, to associate training requirements in terms of current and alternative task training modules, and to assess managers' preferences for alternative training programs.

The resource/cost subsystem determines the types and amounts of resources required to provide training for each task training module in each training setting, and estimates training capacities and variable costs. Using these cost estimates, various summaries can be produced highlighting constraints and assessing relative costs.

The integration/optimization subsystem provides for the structural integration of databases in the other three subsystems and coordinates the operation of the system as a whole. This subsystem includes a user interface component and report generation component.

User documentation. In the course of the TIDES development, a user's manual will be developed. This will facilitate the user's application of TIDES. No user documentation exists at this time.

Outputs. TIDES has the capability to map an AFS's current utilization and training pattern, dynamically model the training associated with alternative combinations of task training modules, provide comparative cost results of alternative scenarios, identify critical resource requirements and constraints, perform analyses of formal training vs. OJT tradeoffs, and estimate OJT requirements. All these types of data are of interest when AFSs are being redesigned.

Computer requirements. TIDES currently is a mainframe computer model. Current AL/HR research is supporting conversion of TIDES to a more user friendly PC environment.

Data requirements. TIDES depends on data derived from four sources:

CODAP (Occupational Measurement Squadron job surveys,
occupational survey reports)
Personnel data files
AFR 50-5, USAF Formal Schools
TIDES surveys completed by trainers and job incumbents.

Status. TIDES is currently operational as a mainframe computer application. Research and development are continuing, however, with priority focusing on making the decision support system more accessible as a personal computer-based system useable by training analysts and others in the field. The PC version should be completed in FY 1997. In addition, TIDES capabilities are now being developed so that it provides 60-80 percent of the data required for building the CFETP; this capability is scheduled to be completed in FY 1995.

Applicability to job structure design. TIDES has been used to support AFS structuring projects. It has proven particularly helpful in identifying training costs associated with alternative combinations of task training modules. Because of current user requirements and user interfaces, these applications have depended upon AL/HR or contractor support. When improvements currently under development are completed, TIDES may become more accessible to the analysts directly engaged in job structuring design and may be used more frequently and effectively.

Primary source(s) of information.

Chin, Keric B.O., Lamb, T.A., Bennett, W.R., & Vaughan, D.S. (1992), Introduction to training decisions modeling technologies: The training decision system. (AL-TP-1992-0014). Brooks AFB, TX: Human Resources Directorate, Armstrong Laboratory.

Mitchell, J.L., Vaughan, D.S., Knight, J.R., Reuter, F.H., Fast, J., Haynes, W.R., & Bennett, W.R. (1992). Training decisions technology analysis (AL-TP-1992-0026). Brooks AFB, TX: Human Resources Directorate, Armstrong Laboratory.

Mitchell, J.L., Yadrick, R.M., & Bennett, W.R. (1993). Estimating training requirements from job and training models. Military Psychology 5(1):1-20, Journal of the Division of Military Psychology, American Psychological Association.

Data and Databases

Introduction

There are substantial amounts of data pertaining to individual AFSSs. These data can be used to create a baseline profile whenever issues related to modifying job structures arise. While the data do not necessarily exist in any manner specifically organized for job structuring, they form a "database" that supports analysis of the impacts of possible job restructurings. Data most frequently used include:

AFM 36-2108 (Formerly AFR 39-1) Specialty
Descriptions
Occupational Survey Databases (OCCS SURVEY DB).

In addition, information developed by the training community for existing AFSSs usually plays an important role. Two training documents that are often considered, at least within the context of occupational survey training extracts if not in additional ways as well, are described here:

Plans of Instruction (POIs)
Specialty Training Standards (STSS).

Participants in U&TWs may also review additional training documentation related to training courses, course development, and testing.⁶

Besides these sets of data, there are two additional databases that sometimes are used to support AFS restructuring efforts. These are:

Occupational Research Data Bank (ORDB)
LCOM Databases.

⁶There is a multitude of training documentation from which one can determine or identify job performance standards and requirements. Besides POIs and STSSs, these include, among others:

Air Force and MAJCOM Job Qualification Standards (JQS)
Course Chart
Career Development Courses (CDC)
Course Training Standard (CTS)
Specialty Knowledge Tests/Specialty Qualifying Tests.

In the future, Career Field Education and Training Plans (CFETPs), which are now being developed for all AFSSs as part of the Year of Training initiative, will become an important source of training information that will be used to support AFS restructuring efforts.

Each will be described in terms of an overview, its purpose, user, content (data types, coverage, etc.), use in job structure design, accessibility, maintenance/update cycles, documentation, and office of primary responsibility. Figure 3 identifies the steps in the job design process where these various databases or sets of data may have or have had application.

AFM 36-2108 (Formerly AFR 39-1) Specialty Descriptions⁷

Overview. The enlisted classification structure, as prescribed by AFR 39-1, contains AFS descriptions, their assigned Air Force specialty codes, and other codes authorized for use in the enlisted occupational classification system. The specialty descriptions and codes are used to identify different types of Air Force jobs and the qualifications of airmen to fill the jobs. Specialty descriptions and other attachments to AFR 39-1 describe the occupational standards required or desired for successful performance in an AFS. These standards are used to procure, classify, and utilize airmen; to develop career programs for initial training, retraining, and skill upgrade; and to structure unit manpower document positions.

With the advent of the CFETP, specialty descriptions in the revised regulation, AFM 36-2108, are expected to be more general in nature with more detailed descriptions and specifications appearing in each education and training plan.

Purpose. The purpose of AFR 39-1 is to establish the Air Force's occupational structure for the enlisted force and provide procedures for its change and updating. From a database perspective, the regulation provides basic descriptions of duties and tasks for all enlisted specialties and identifies basic qualifications.

User. AFR 39-1 descriptions serve as a basic reference for U&TW participants during the course of an AFS restructuring. Beyond restructuring, the specialty descriptions are used by personnel throughout the Air Force for general information purposes, for training planning, and personnel management and assignment, among other users.

Content. Specialty descriptions are comprised of five parts: heading, specialty summary, duties and responsibilities, specialty qualifications, and specialty shredouts. The heading consists of the specialty title, effective date, and the assigned AFSC. The specialty summary gives a concise statement of the scope and characteristics of the specialty; it also provides the

⁷This description is based on AFR 39-1 since draft copies of AFM 36-2108 were unavailable for review.

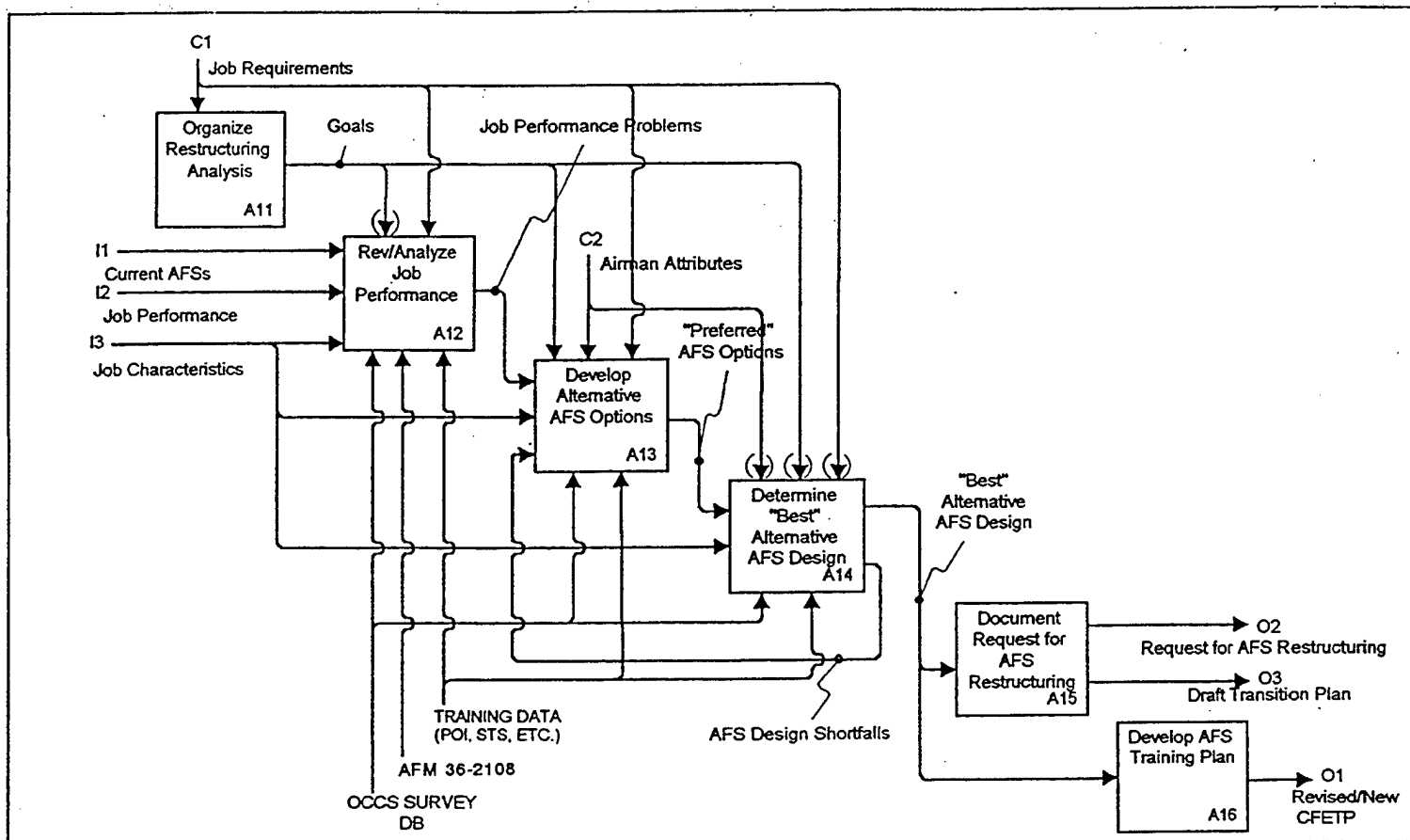


Figure 3. Use of existing data and databases in the job structuring design process (IDEF Node A1: Develop Request for AFS Restructuring).

conversion table subgroup as listed in the DoD Occupational Conversion Table. "Duties and Responsibilities" describes representative technical and supervisory duties and responsibilities of the 5-, 7- and 9-skill level. Specialty qualifications establish both desirable and mandatory occupational standards for effective performance of the AFS. Qualifications may consist of all or part of the following: knowledge, education, experience, training, physical standards, security clearances, licenses, etc. Specialty shreds list alphabetical suffixes used with basic AFSCs to identify equipment or functions.

Use in job structure design. The AFR 39-1 job description is a focal point in a job structuring design effort. The job description represents the baseline when a job structuring action is initiated. When the design process has been completed, changes are made in the AFR 39-1 job description if the specialty has been restructured.

There are circumstances, however, when changes made to a specialty do not lead to changes in its description. For example, changes in required knowledges and skills or training requirements may result in a restructured specialty although its duties and responsibilities continue to be the same. This situation may occur more often after AFM 36-2108 is issued since its specialty descriptions are expected to be more general with much of the detail documented in the CFETP.

Accessibility. The regulation is available to any interested persons and can be obtained through Air Force publication channels.

Maintenance/update cycles. Until the cycle and pattern were disrupted in FY 1994 by the pending promulgation of AFM 36-2108, AFR 39-1 was updated on a semi-annual basis. Recommended changes submitted to AFMPC not later than 28 February became effective the following October, and those submitted not later than 31 August became effective the following April, assuming the changes were successfully coordinated and approved.

Documentation. AFR 39-1, Airman Classification, more than 1000 pages in length, exists in printed form. In addition, the Air Force has published a companion chart listing all AFSs by job title and skill level within occupational groups (AFVA 39-1).

Office of primary responsibility. AFMPC/DPMYMC.

LCOM Databases

Overview. LCOM has been described elsewhere as a simulation model used for analyzing maintenance manpower requirements. Inherent in any LCOM application is the development of a database for the aircraft for which maintenance is being modeled. LCOM

databases are created in part from the MDC system. Databases exist for the A-10, F-16, F-15, F-117, F-111, B-1, and B-52, among others. While these have been created expressly for use with LCOM, they include data such as maintenance networks, resources, and repair times that may have utility in their own right in considering AFS structuring issues.

Purpose. The purpose of LCOM databases is to provide the input for running LCOM simulations. They are developed and maintained expressly for this purpose.

User. MAJCOM manpower planners.

Content. LCOM aircraft maintenance databases include data identifying direct maintenance tasks, repair times, failure rates, and task frequency. They usually do not include indirect maintenance tasks. Consequently, they portray only a portion of a specialty's work.

Use in job structure design. Using LCOM databases in the job structure design process makes sense largely in the context of LCOM applications. As occurred during Rivet Workforce, analysis of sortie generation capabilities based on alternative task structures can be useful.

Use of LCOM databases apart from applications of the model is limited. The databases contain task inventories of direct aircraft maintenance tasks which may be of some interest; however, more detailed task inventories are usually available from occupational survey databases.

Accessibility. Data extracts can be requested from MAJCOM users either in hardcopy form or on magnetic tape.

Maintenance/update cycles. No regularly scheduled updating occurs; however, databases are routinely updated as they are being used in manpower analysis. Most of the databases identified in this description are current.

Documentation. There is no specific documentation addressing LCOM databases. However, the LCOM user's manual, AFM 171-605, documents data requirements, development, and procedures.

Office of primary responsibility. MAJCOM manpower planning offices have responsibility for individual databases in conjunction with their applications of LCOM. These offices include:

ACC/XPMEL, AMC/XPM, AFMC/XPM, and AFSOC/XPM.

Occupational Research Data Bank (ORDB)

Overview. ORDB is an on-line, data retrieval system providing

access to a wide variety of occupational data about Air Force specialties and the people who work in them. ORDB is a user friendly system where users are guided through the interface routines to generate the desired screen displays or printed hardcopy reports. ORDB is an automated source for occupational survey data; consequently, its data attributes are those of the OMS occupational survey program.

As result of recent budget constraints, ORDB has not been maintained on a current basis over the past year. Despite the lack of recent updating, it remains accessible through AL/HR and contains AFS characteristics data going back 20-30 years. Its descriptive data are basically current through FY 1992; thereafter, it is less complete.

Purpose. The primary purpose of ORDB is to provide access by AL/HR research scientists to occupational research data.

User. AL/HR research scientists.

Content. ORDB contains data pertaining to Air Force specialties. One set of data includes listings of occupational studies, technical reports, and other documents related to Air Force jobs; these data can be searched using keywords to locate reference material pertaining to a particular occupational area. A second set of data includes AFS descriptions, progression ladders, and prerequisites since 1978, as well as an AFSC number change history file tracking changes since 1965. A third data set contains five years of statistical data on the enlisted force by AFS, population group, and year on a total of 125 variables. A fourth set contains selected reports from the Air Force occupational studies which have been conducted by OMS.

Use in job structure design. To the extent that ORDB contains historical data, e.g., AFS descriptions, progression ladders, prerequisites since 1978, analysts engaged in job structure design can retrieve data about AFSSs of interest to examine how they have evolved to the present. In so doing, insight may be gained to past restructurings. In addition, its statistical data by AFS may also be helpful in identifying characteristics of existing specialties.

Despite its potential utility, ORDB is not a data resource commonly used in U&TWs. Given that its primary purpose is to support research, use of ORDB requires active user intervention. Since the U&TW receives occupational survey data in the form of training extracts directly from OMS, there is generally no need to turn to ORDB. Furthermore, the historical data available from ORDB is generally not a focus of attention.

Accessibility. Authorized ORDB users can gain access with assistance from AL/HR to the database through remote terminal and signing on to the UNISYS 1100/82 at Brooks AFB.

Maintenance/update cycles. Historically, ORDB has been updated on an on-going basis; however, since FY 1992, routine maintenance has been suspended.

Documentation.

ORDB Users Manual, AFHRL, 04 November 1988.

Office of primary responsibility. AL/HR.

Occupational Survey Database

Overview. This database is a product of the Air Force's occupational analysis program (AFI 36-2623). Raw data from occupational surveys are maintained on magnetic tapes which are used for subsequent data processing. Usually when surveys are conducted, the raw data are summarized in occupational survey reports which provide a basic description of the AFS and its job performance and training. In addition, training extracts are prepared; these support the U&TW when job structuring efforts are undertaken. The occupational survey data are not maintained as an operational database; however, the data are stored and are available when there is a need to analyze the data beyond that available through occupational survey reports and training extracts.

Purpose. The occupational survey databases do not have any intrinsic purpose in and of themselves. They exist as a by-product of the Air Force's occupational survey program. Surveys are conducted, the resulting data are analyzed, and thereafter retained for purposes of further analysis. The magnetic tapes containing the raw survey data constitute this database. Its most common use, however, is in creating occupational survey reports and training extracts.

User. The principal users of occupational survey data are the OMS occupational analysts who use the data to prepare occupational survey reports and training extracts. In addition, members of the training community use survey data extensively to support the development of training and test material.

Content. Two products of primary interest in the job design process are the occupational survey report and the training extract.

The occupational survey report summarizes the results of an occupational analysis. It includes the following information: sampling information on incumbents participating in the survey; duty and task job descriptions for various skill level groups, experience level groups, CONUS-overseas groups, and major commands; and descriptions of significant jobs being performed among the incumbents surveyed.

The training extract is a compiled volume of computer products related primarily to training development. It contains occupational survey data matched to the STS and POI documents, as well as training emphasis and task difficulty information.

Use in job structure design. Occupational survey data have a prominent role in job structuring. Usually one of the early presentations occurring in an U&TW is made by an OMS analyst describing the present condition of the AFS based on the most current occupational survey data. This presentation is based on the training extract.

Accessibility. Occupational survey data are available by request to OMS. OMS analysts can identify the AFSs for which data are presently available.

Maintenance/update cycles. According to AFI 36-2623, AFSs are to be surveyed at least once every five years. However, if there is a need for more current data, a survey may be conducted earlier.

Documentation. OMS provides its analysts with a handbook to guide them in the conduct of surveys and the preparation of occupational survey reports and training extracts:

USAFOMS/OMYO (1993). Occupational analyst handbook: a guidebook for occupational analysts working with enlisted career ladders. Randolph AFB, TX.

From the perspective of the analyst engaged in job design or participating in U&TWs, the major documents of interest are training extracts and occupational survey reports. These generally satisfy most needs for occupational data. However, if there are other issues of interest beyond the scope of these documents, the analyst can request OMS to retrieve the data tapes and use CODAP to develop additional information.

Office of primary responsibility. USAF Occupational Measurement Squadron, Air Education and Training Command.

Plans of Instruction

Overview. POIs are required for all initial training programs. The content of such courses is based on the 3-level column of the STS. The POI includes specific criterion objectives to address each required STS area, stated in behavioral terms. These POI objectives become the specific interpretation of the minimum proficiency or knowledge required for each STS item and reflect the expectation of field supervisors as to the minimally acceptable performance for each subject or task area. Since the POI is an internal AETC course control document, it is not normally distributed or available outside AETC. The training evaluation system is tied to behavioral objectives outlined in a course POI. Likewise, the normal U&TW or Training Planning Team

(TPT) effort is focused more on the changes to the STS, as the primary AFS training document, rather than being involved in reviewing specific POI objectives.

Purpose. The POI is a qualitative course control document designed for use primarily within an Air Force school for course planning, organization, and operation.

User. The primary users are course instructors.

Content. Generally, for every block of instruction within a course, a content summary, student instructional material, training method and time, and instructional guidance are listed.

Use in job structure design. The POI itself may be reviewed to identify training associated with an AFS. Its most significant use, however, occurs in the context of the training extract.

As part of the training extract, there usually is a POI-data printout which shows the match between the USAF Job Inventory tasks and POI behavioral objectives. By using this printout, training personnel can see which jobs are related to the objectives being taught in resident training courses. It displays percent of first job and first term personnel performing each task, as well as training emphasis and task difficulty data. It also lists items not being currently trained in the course but which may need to be added.

Accessibility. POIs are available in printed form from the technical training centers and AETC.

Maintenance/update cycles. POIs are updated when there are changes to the training required for an AFS. These changes are usually reflected in revised STSs. Most often, this occurs as result of a U&TW. In between reviews, the POI may also be updated if there are changes in required training.

Documentation. AFM 50-26 provides guidance for the development of POIs. POIs exist for all training courses and are identified by the course identifier.

Office of primary responsibility. Technical training centers have primary responsibility with AETC reserving review authority.

Specialty Training Standards

Overview. The STS is an Air Force publication that describes an AFS in terms of tasks and knowledges which an airman in that specialty may be expected to perform or to know on the job. It further serves as a contract between AETC and the functional user to show which of the overall training requirements for an AFS are taught in formal schools and correspondence courses.

As prescribed in AFI 36-2201, the STS outlines the training required to achieve skill level(s) within an AFS, identifies general study references, and contains a specification of subject knowledge levels, task knowledge levels, and task performance levels required for each skill level in a specific AFS. While not a database in the conventional sense, the STS specifies the required training for a specialty and, as such, represents important training data.

The STS is used in many ways. It is the document used to implement changes in training required by an AFS restructuring. The STS guides OJT since it is the basis for identifying the common tasks which may be performed in most field units, and the supervisor uses the STS to identify such tasks and to certify when the individual is able to perform those tasks satisfactorily. The STS also is used as a guide for development of AETC courses for the AFS, for the content of CDC, and for development of SKTs. In sum, the STS is a critical baseline document for the development and conduct of AFS training.

Purpose. The STS is a training control document used in the standardization and quality control of airman training. The purpose of the STS is to identify the tasks, knowledges, and technical references and the proficiency levels that must be achieved for an airman to be qualified in a specific AFS at the 3-, 5- and 7-skill level.

From the perspective of the airman, the STS serves as a document to record completion of task and knowledge training requirements through OJT and formal training. When used in this manner, the STS becomes a Job Qualification Standard (JQS).

User. As a statement of required training, the STS has a wide range of users, mostly members of the Air Force training community, particularly course and test developers. As a training control document, the STS is also used in the field to record airman training.

Content. The first few pages of an STS contain a standard statement of purpose for the standard and a description of the STS coding system. After these preliminaries, there is a detailed listing of tasks, knowledges, and technical references in table format. The table shows proficiency codes for each entry; these indicate the training/information provided.

Use in job structure design. Existing STSs usually in the form of training extract printouts, matching standards to survey responses, are used in U&TWs to review existing training. This review leads to an identification of training problems, either where training occurs that is not needed or vice-versa, and to comparisons of required training among AFSs that are candidates for restructuring. In addition, when AFS structural changes occur, the STS must be updated.

Accessibility. STSs are available in printed form from the technical training centers and AETC. In addition, OMS, as part of its analysis of occupational survey data and the development of training extracts, produces STS data printouts showing the match between the survey task inventory and the STS paragraphs and subparagraphs.

Maintenance/update cycles. STSs are updated when there are changes to the training required for an AFS. Most often, this occurs as result of a U&TW. In between reviews, the STS may also be updated if there are changes in required training.

Documentation. AFI 36-2201 (pending) is the Air Force instruction establishing STS requirements. STSs exist for all AFSSs and are identified by the AFS code. For example, the STS 2E1X2 is the standard for AFSCs 2E132/52/72, Meteorological and Navigation Systems Repairers.

Office of primary responsibility. Technical training centers have primary responsibility with AETC reserving review authority.

Part 2: IDEF Model: Air Force Job Structuring Design Process

Part 2 presents the Air Force specialty design process in the form of an IDEF model. The focus of this presentation is the process, "Re(Design) Air Force Enlisted Specialties." As noted in the Introduction, this is the second of three procedures that comprise the Air Force Enlisted Specialty Structuring Process.

The major purpose for creating this IDEF model has been to provide the Air Force human resources research community with a procedural foundation that can be used in developing an integrated research plan. Secondly, the model may be useful in establishing procedural standards for specialty structuring.

Fundamentals of IDEF Modeling⁸

To facilitate the reader's interpretation of the IDEF model depicted here, an understanding of selected IDEF fundamentals and modeling conventions may be helpful.

Activities and ICOMs

The essential building block of an IDEF model is an activity that uses mechanisms to transform inputs into outputs as directed by controls. Inputs, controls, outputs, and mechanisms are generically called ICOMs.

Linking Activities

IDEF activities may be linked together. The linkage is created by using the outputs of some activities as inputs, controls, and/or mechanisms of other activities. The linkages appear in the model as arrows. The result is a network of activities and ICOMs that describe how something is accomplished. Any such network can be summarized as a single higher-level activity. Conversely, any activity can be decomposed into a network of lower-level activities.

Arrows and Labels

Every ICOM in an IDEF model is represented by an arrow with an associated label. For example:

Current AFSs



The label briefly describes the ICOM that the arrow represents.

⁸This section is based on material excerpted from META Software Corporation's Design/IDEF Tutorial, 1987-1994.

Decomposition Pages

To control model complexity, IDEF uses a system for distributing the graphic presentation of a model over multiple pages, each of which contains some of the graphics that constitute the model. These "decomposition" pages are organized into a hierarchy in which each level presents a more detailed view of the information shown at the level above.

Structure of an IDEF Model

Every IDEF model has a top-level page called the "context page". This page contains a single activity that represents the entire process as a single activity and shows the process' interface to the outside world.

Node Numbers and Page Numbers

Every activity box in an IDEF model has a node number, which appears in the lower right corner of the box. A box's node number indicates the position of the box in the hierarchy of the model.

The top-level activity box, on the context page, always has the node number A0 (A-zero). The "A" stands for Activity; the "0" indicates that the activity is the zeroth level of the model. An activity box on a decomposition page has a node number that is the number of the parent box suffixed with an additional digit for the box itself.

Every page in an IDEF model has a number also. For the context page, it is always A-0 (A-minus-zero). For a decomposition page, it is the node number of the parent box.

Node Trees

When an IDEF model is large, its overall structure can become hard to grasp because it is distributed over so many pages. To help with this problem, the model can be represented as a tree of activities, with ICOMs omitted.

Figure 4 displays an IDEF node tree illustrating the structure of the Air Force model. The IDEF node tree shows that the structuring process is broken into two activities: "[A1] Develop Request for AFS Restructuring" and "[A2] Staff Request for AFS Restructuring". The A0 chart in the model shows these activities. Following this chart and its narrative are

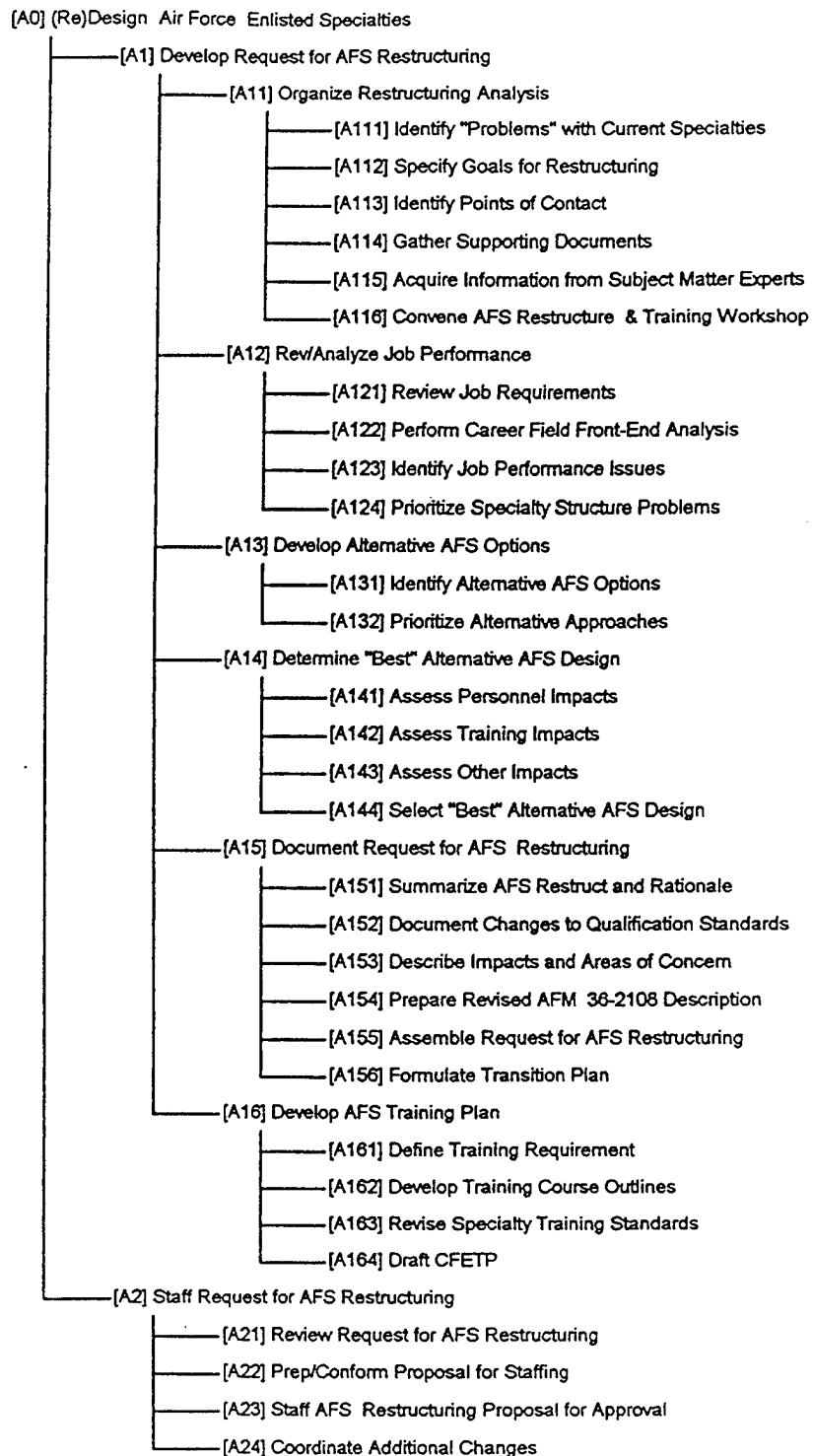


Figure 4. IDEF Node Tree: (Re)Design Air Force Enlisted Specialties

a series of charts and descriptions showing the detail of the A1 activity. Node A1 is divided into six activities, each of which is further decomposed. Following the A1 charts are the charts depicting and describing the A2 processes.

Context, Node, and Title

Each page of an IDEF model shows <context>, <node>, and <title>. The purpose of these elements is to keep track of which activity box on the parent page is the parent box of a decomposition page.

The <context> variable, appearing as a small graphic in the upper righthand corner of the page, depicts a very small copy of the parent page. The parent box of the decomposition box has a gray fill; the rest (if any) are empty.

The <node> variable, located in the lower left hand corner of the page, shows the node number of the decomposition page's parent box and the <title> variable shows the parent box's name.

Ports and Tunnels

A "port" is used to carry an ICOM from its parent page to its decomposition page. A port is a representation on a decomposition page of an ICOM whose arrow attaches to the parent box on the parent page. A port consists of two labels: (1) an ICOM code which tells what kind of ICOM the port represents and where it attaches to the parent box, and (2) a text label naming the ICOM that the port represents.

Often in IDEF models, many ICOMs that connect to a parent box may also connect as a port with every box on a decomposition page. This circumstance can lead to decomposition pages filled with arrows between ICOMs and activities obscuring the substance of the model. IDEF allows the user to eliminate ports on the decomposition page through a convention called "tunneling". Tunneling an ICOM means that the ICOM will not appear on other pages of the model. A tunneled ICOM can be identified whenever the tail or head of its arrow is surrounded by parentheses. If parentheses surround the tail, the ICOM will not appear on pages at levels higher than the present page. If parentheses appear at the head of the arrow, the ICOM will not appear on the decomposition pages.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
			DRAFT			Top
			RECOMMENDED			
			PUBLICATION			

AUTHOR: Akman Associates, Inc.

NODE: A-0	TITLE: Air Force Specialty Design Process	PAGE: 1
-----------	---	---------

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force AUTHOR: Akman Associates, Inc.	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
		REV: 1.0	DRAFT			Top
			RECOMMENDED			
			PUBLICATION			

A0 (Re)Design Air Force Enlisted Specialties

"(Re)Design Air Force enlisted specialties" encompasses the actions taken to create or modify enlisted occupational specialties including identification of problems or needs leading to restructuring, the analysis and design of alternative specialties, and the formalization of new specialties into the Air Force's system of regulations and policy.

Context. The immediate context for this procedure is the larger process involved in maintaining the Air Force's occupational classification system; this larger process includes determining that the need exists to create new specialties or restructure existing specialties as well as the process for implementing the changes in personnel policies and training necessary for airmen to be qualified in the new specialties.

Maintaining the Air Force's occupational classification system is one of many processes that exists as part of the activity, Perform Military Personnel Operations, that has been documented in the DoD Military Personnel Corporate Model. In the DoD context, Air Force Specialty (AFS) structuring activity has been identified as part of the process to classify or reclassify skills (A322).

Perspective. This description of the AFS structuring process has been developed from the perspective of the principal participants in the process who are involved in determining the changes that need to be made to existing AFSs or developing new AFSs in response to recognized needs. The participants include the Air Force career field manager (AFCFM), participants in AFS restructure and training workshops (R&TW) including the MAJCOM functional managers, and the personnel of the classification branch of the Air Force Military Personnel Center (AFMPC/DPMYMC).

Purpose. The primary purpose of this description is to create a procedural baseline which can be used by Armstrong Laboratory's Human Resources Directorate (AL/HR) to identify research needs and priorities. Secondly, this description may also be used as a procedural reference for participants in the restructuring process.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
			DRAFT			Top
			RECOMMENDED			
			PUBLICATION			
AUTHOR: Akman Associates, Inc.		REV: 1.0				

Inputs, Controls, Outputs, and Mechanisms (ICOMs)

Associated with each procedure are inputs, controls, outputs, and mechanisms. In the context of IDEF modeling, each of these attributes has a distinct purpose. An "input" is something transformed by an activity. An "output" is something that is produced by or results from an activity. A "control" is something that determines how or when an activity occurs, but is not transformed by it. A "mechanism" is a person, facility, machine or agency that performs the activity.

Inputs

There are three major sets of inputs into the job structuring process: current AFSs, job performance, and job characteristics.

Current AFSs. "Current AFSs" exist in the form of descriptions of the specialty's duties and responsibilities, major tasks, equipment, special tools, and materials as well as details regarding specialty qualifications including knowledge, education, training, experience, and other requirements. This information has generally been documented in the AFR 39-1 specialty descriptions and, based on the current revisions to the Air Force's system of regulations and instructions, will be available from the Career Field Education and Training Plan (CFETP).

Job performance. "Job performance" data are related to the way in which the job is presently being performed. These data include field observations by SMEs who identify AFS restructuring needs based on current job performance, training, and/or changes in equipment and technology. The data also indicate task difficulty and training emphasis (usually provided by the Occupational Measurement Squadron (OMS) in the form of a Training Extract), career field progression, and personnel utilization, among other data pertaining to job performance.

Job characteristics. "Job characteristics" data include all the manpower, personnel, and training data that are not performance related and characterize the AFSs being restructured. Included are force structure, authorizations, unit manning, grade structure, aptitude requirements, physical abilities and characteristics, job qualification standards, specialty training standards, course training standards, plans of instruction, among others.

Controls

There are four major sets of controls that influence the way in which AFSs are created and restructured. Some, namely job requirements and airman attributes, bear directly on the specific decisions involved in establishing the need for restructuring and developing alternative AFS structures. Others, namely Air Force policy and force structure, are established as matters of HQ USAF policy and have significance well beyond issues of AFS structuring.

Job requirements. This control identifies the job or jobs that must be performed in order to meet specific mission requirements. Current AFSs are evaluated against the "job requirement" standard in order to determine if and what shortfalls exist and to establish how existing AFSs must be modified in order for the job requirement to be met. The "job requirement" serves as a point of reference when restructuring existing AFSs. The "job requirement" usually encompasses a statement of mission, levels of performance, e.g., sortie rates, etc., physical demands (PULHES), and an enumeration of duties and tasks that the job holder must be able to perform.

Airman attributes. "Airman attributes" are those characteristics that are inherent in the pool of people available to be assigned AFSs and perform effectively in the prescribed job. These attributes are represented by airman aptitudes and physical abilities, among other key attributes.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
			DRAFT			Top
			RECOMMENDED			
			PUBLICATION			
AUTHOR: Akman Associates, Inc.						

Air Force policy. Air Force regulations and instructions establish what AFSs are and how they can be changed. Currently, AFR 35-1 and AFR 39-1 are the most significant with respect to AFS restructuring. The former establishes overall Air Force classification policy and the latter specifically describes airman specialties and procedures for their change. These regulations are in the process of being changed to an instruction, AFI 36-2101, and a manual, AFM 36-2108, respectively. These changes will not significantly alter the theme of these regulations; however, much of the detailed description of airman specialties will no longer be included in the instruction but documented in the CFETP.

Force structure. "Force structure" identifies the authorized endstrength of the Air Force and the way in which its people are distributed into major commands and organized in subordinate units. Unit manning documents detail the specific positions within performing work centers. There may be instances where AFS restructurings drive changes in force structure in which case reclassifying force structure as an input to the restructuring process may be appropriate. However, generally speaking, force structure is established and controls AFS structure decisions.

Outputs

There are three major sets of outputs from the job structuring design process: revised or new AFSs approved for implementation, revised or new CFETPs, and a transition plan. The first is the focus of attention in this effort. The second is the major product of a training planning effort. And, the third establishes the milestones and responsibilities for restructuring the AFSs.

Revised/new AFSs (Approved for Implementation). A revised or new specialty description, consistent with the format of AFM 36-2108, is prepared. This includes a summary of the specialty's duties and responsibilities, a detailed description of major tasks, and details regarding specialty qualifications.

Revised/new CFETPs. A revised or new CFETP is also prepared. This consists of two parts, one documenting general background information and the other providing training detail. The CFETP is used by the training community to revise or develop courses and related training associated with the new AFS.

Transition plan. The transition plan identifies milestones and action offices of primary responsibility (OPRs) for the steps required for formalizing an AFS restructuring in the Air Force's classification system. The plan lays out the steps to be followed in the third major activity in an AFS restructuring. Its activities should provide a smooth transition, facilitate transition training, and minimize impacts on personnel and units. When the transition steps have been completed, the revised AFSs are formally published in AFM 36-2108.

Mechanisms

There are six sets of mechanisms, which in the case of this description, represent Air Force offices and agencies that play roles in the AFS restructuring design process. These include the AFCFM, the MAJCOM functional managers, unit level subject matter experts (SMEs), AFMPC, HQ USAF, and others. These parties may work together within the forum of an AFS R&TW to redesign one or more AFSs or any one of them may act as the catalyst to initiate an AFS change. Most frequently, however, the changes are initiated by the AFCFM. AFMPC is always the party responsible for formal implementation of the change in AFM 36-2108.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:						
							AUTHOR: Akman Associates, Inc.	REV: 1.0	DRAFT	RECOMMENDED	Top	
												PUBLICATION

AFCFM. The career field manager has responsibility, among others, to monitor the "health" of the enlisted AFSs within his career areas. The career field managers for aircraft maintenance, communications-electronics maintenance, and medical each oversee 20-40 AFSs. In most other instances, the career field manager is responsible for only a few. The managers are continuously talking with senior enlisted personnel in the field soliciting information on how well established specialties are performing. When information from the field suggests that significant problems exist, the career field manager may initiate a restructuring effort. Besides feedback from the field, changes in USAF policy or the introduction of new equipment or technology may also lead the career field manager to initiate an AFS restructuring effort. Once initiated, the AFCFM is a key participant leading the analysis and decision-making that result in AFS change proposals.

MAJCOM functional managers. At the MAJCOMs, there are functional managers who are the counterparts to the AFCFM. The functional managers have responsibility for AFSs within the MAJCOM and monitor the needs and problems that may arise. The functional managers advise the AFCFM, who solicits their input regarding the health and status of AFSs. If AFS problems occur within a MAJCOM, the functional manager notifies the AFCFM of the circumstances and potential restructuring needs. If a restructuring effort is initiated, the functional managers participate in the analysis and decision-making leading to revised AFSs.

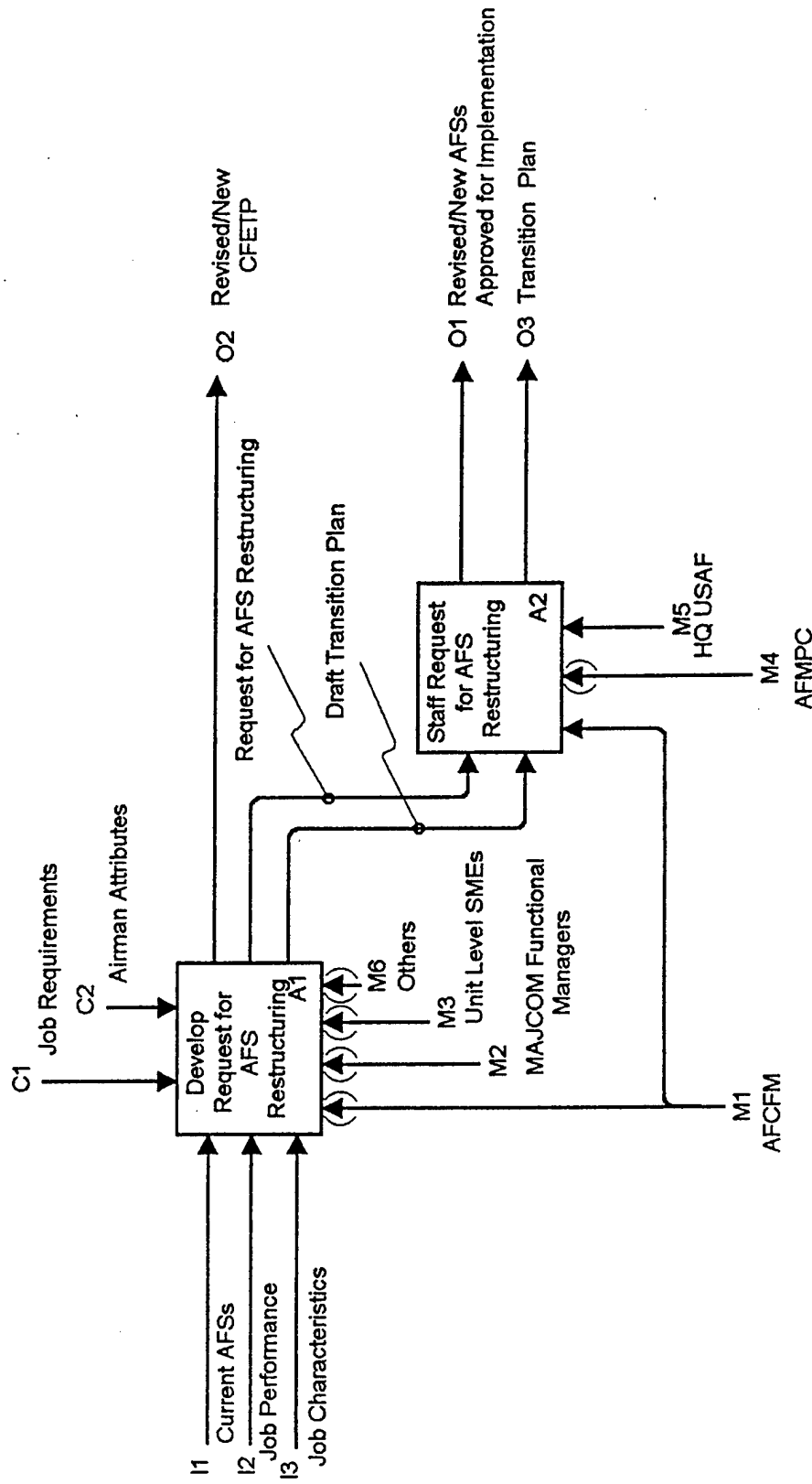
Unit level SMEs. Senior enlisted personnel within operational units are a major source of information concerning AFS job performance. They may be contacted by the AFCFM for information or they may advise the AFCFM of job performance problems. The AFCFM may invite selected personnel to participate as subject matter experts at R&TWs.


AFMPC. As the OPR for AFM 36-2108, AFMPC is the agency responsible for staffing and formalizing proposed AFS changes. Where the AFCFM has a focus on analyzing the needs for restructuring and designing revised specialty structures, AFMPC has the major procedural responsibility for obtaining approval and publishing the revised specialties as part of AFM 36-2108.

HQ USAF. Whenever AFSs are being restructured and formal proposals have been developed, Air Staff agencies, whose interests may be affected, review and approve the changes. Usually, the personnel, training, and logistics communities are involved in this staffing. Others such as medical may also participate depending upon the specific AFS structuring proposals.

Others. There are many other Air Force agencies that may be involved in the process. For example, the Occupational Measurement Squadron through its Occupational Survey Program makes its data available, usually in the form of Training Extracts and Occupational Survey Reports. Air National Guard (ANG) and Air Force Reserves (AFRES) will participate when specialty structuring issues affect their interests as well. Armstrong Laboratory and AETC may also be involved when their specialized expertise is required. The latter faces an expanded role as do other agencies such as Air Force Management Engineering Agency (AFMEA) once a proposal for restructuring an AFS has been approved and implementation of the change begins.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			
			RECOMMENDED			
			PUBLICATION			



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT: 
			DRAFT			
			RECOMMENDED			
			PUBLICATION			
AUTHOR: Akman Associates, Inc.						

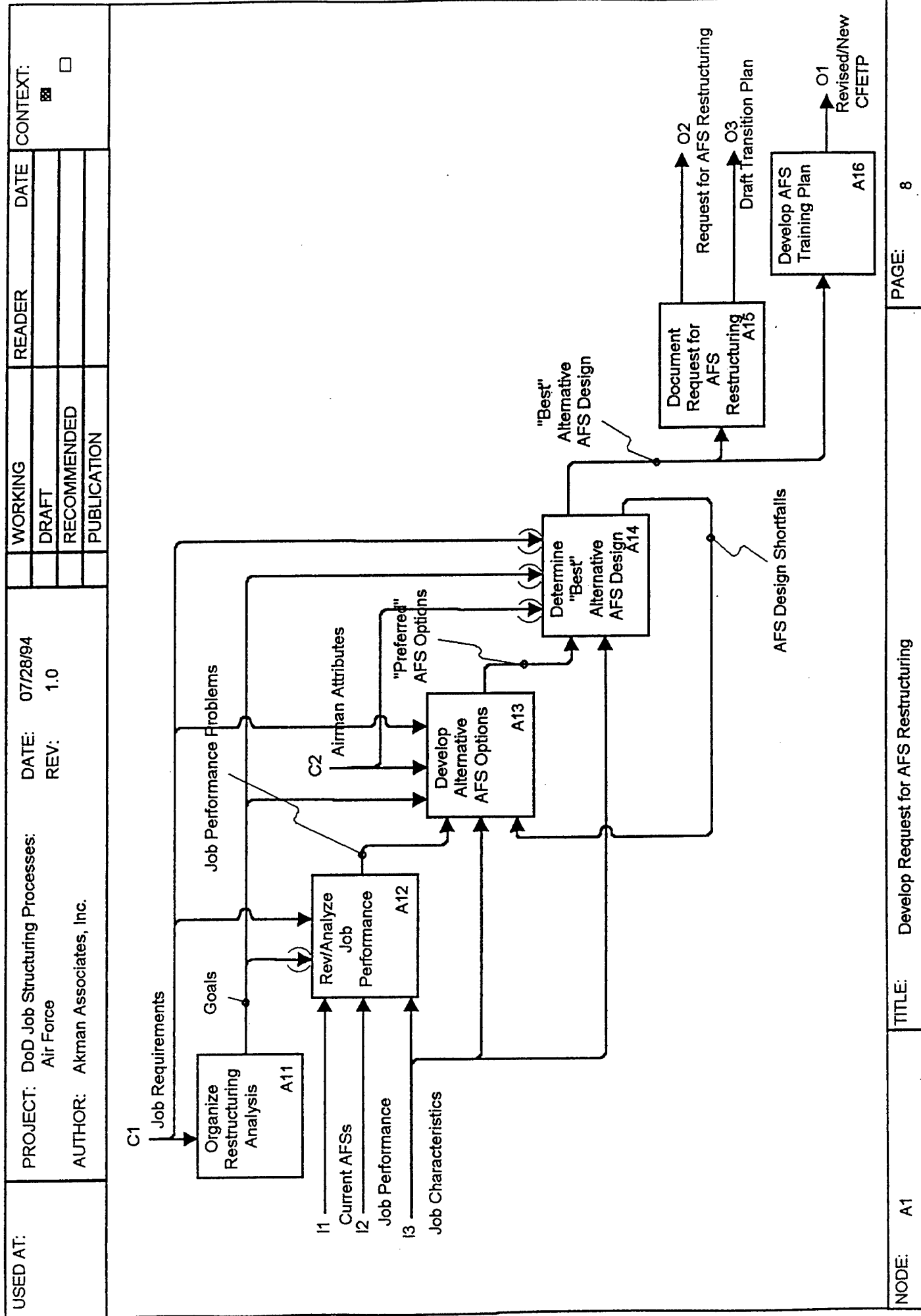
A1 Develop Request for AFS Restructuring

"Develop Request for AFS Restructuring" is one of two major processes in designing new or modified AFSs. Its purpose is to perform the analysis and develop proposals for modified AFSs in response to perceived problems or needs. This process, the principal analytical activity that occurs with respect to restructuring, involves six steps: recognizing need, analyzing job requirements and performance, developing alternative specialty structures, determining the best approach for meeting the job requirement, and documenting the restructuring request and career training plans for subsequent staffing and approval. While there are numerous participants in this procedure from throughout the Air Force, the key players include the AFCFM, who initiates AFS restructuring workshops, and the functional community managers who represent MAJCOM interests pertinent to the AFSs under review.

Most of the procedures occurring in this process occur in preparation for or within the context of an AFS R&TW. There are instances, however, when restructuring is undertaken by the AFCFM without a formal R&TW occurring. In these circumstances, many of the steps described here at the 3-digit level either do not occur or do not occur explicitly.

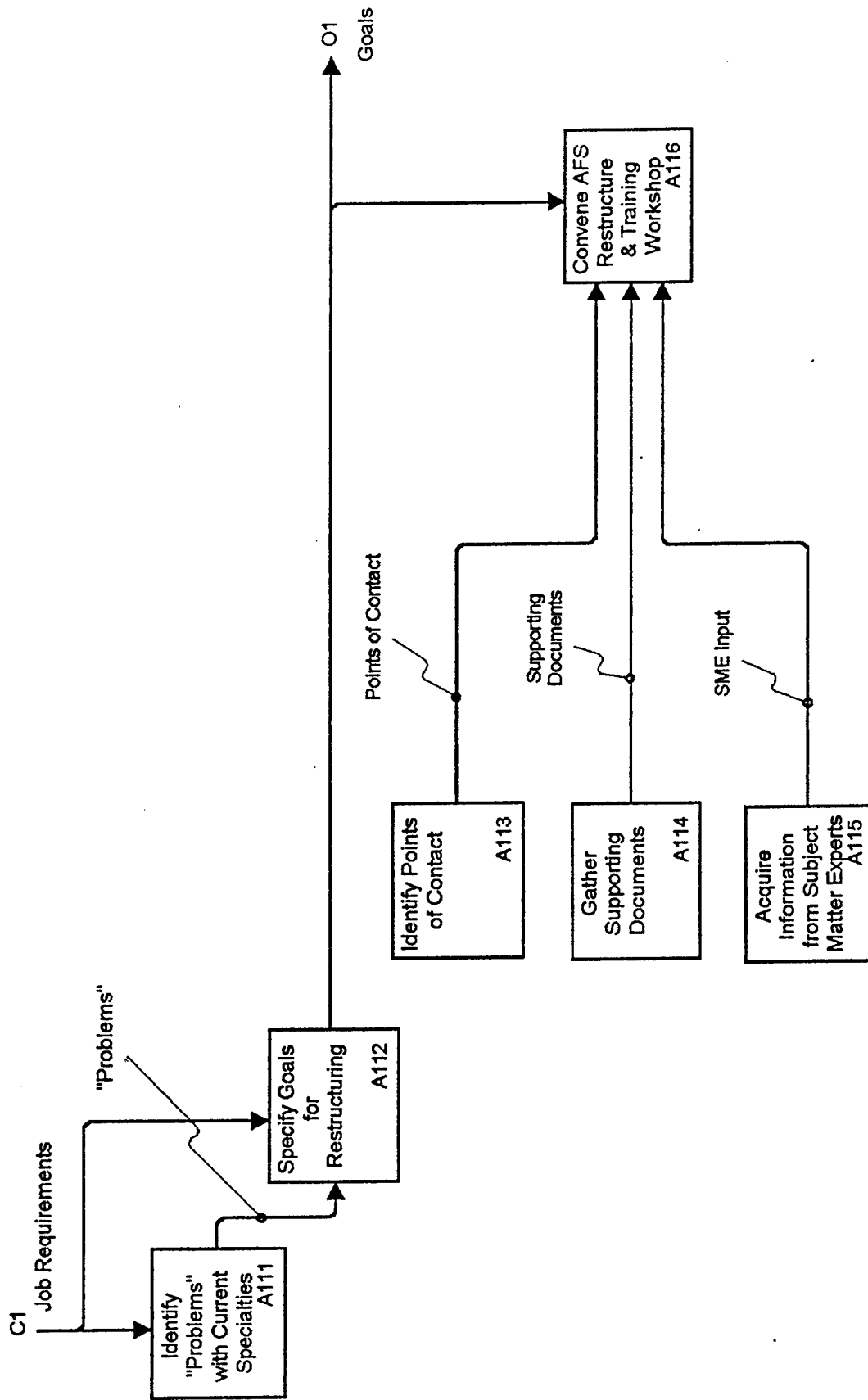
A2 Staff Request for AFS Restructuring

"Staff Request for AFS Restructuring" is the second major process involved in developing new or modified AFSs. Its purpose is to make certain the AFS change proposal meets Air Force regulatory and policy requirements and to circulate the request among approving authorities for their acceptance. There are four steps included in this process: reviewing the AFS change request for its conformance to AFM 36-2108, preparing a staffing package, the staffing itself, and resolving any objections arising out of the review process. AFMPC/DPMYMC has primary responsibility for executing the steps in this process. In addition, the Air Staff, the AFCFM, as well as others, participate in the review, approval, and coordination of the restructuring. Since most of the coordinating agencies, if not all, have participated in the R&TW through their representatives who approved the change request, this coordination process generally proceeds without further changes being made.



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:							
							AUTHOR: Akman Associates, Inc.	DRAFT	RECOMMENDED	PUBLICATION	<input checked="" type="checkbox"/>		
												REV: 1.0	<input type="checkbox"/>
<p>A11 Organize Restructuring Analysis</p> <p>Once a need has been established for structuring or restructuring one or more AFSs, the initial procedure is to organize the analysis by developing and gathering basic information, identifying points of contact and interested parties, and convening an AFS R&TW.</p> <p>A12 Review/Analyze Job Performance</p> <p>Within the R&TW, the initial step is to review and analyze the job performance data that has been gathered and provided to the participants. This review aims to identify the job performance requirements, assess the actual job performance, review specialty training, and determine what current problems need to be resolved and their priority for resolution. Unlike the identification of "problems" occurring in A11 that is based on field observation, this process involves a more organized analysis of data and review of documentation.</p> <p>A13 Develop Alternative AFS Options</p> <p>Having identified and prioritized problems related to job performance and training, ways to modify existing AFSs are formulated. Basic options for restructuring the current AFSs are determined, i.e., modifying (adding or removing) core tasks of existing AFSs, combining two or more AFSs, recasting specialties in terms of different mixes of core tasks, adding SEIs, prefixes, or shreds, etc. In addition, the alternative approaches are usually prioritized in an order reflecting which options might most effectively address the current and future job performance and training problems. This process generally occurs within the framework of the R&TW.</p> <p>A14 Determine "Best" Alternative AFS Design</p> <p>The purpose of this step is to determine the "best" option for restructuring the AFSs under review. This determination is accomplished based on an analysis of the personnel and training impacts of the various "preferred" options as well as an assessment of the best ways to reduce any negative impacts.</p> <p>A15 Document Request for AFS Restructuring</p> <p>In order to advance an AFS structuring proposal through the Air Force specialty classification system, an AFS change request is prepared in accordance with the guidance provided in AFM 36-2108. The request provides a brief description of the proposed change, the rationale, revised description of duties and tasks, evaluation of training requirements, detailed summary of manpower and personnel impacts, and recommendations for conducting occupational surveys.</p> <p>A16 Develop AFS Training Plan</p> <p>In January 1992, the Air Force Chief of Staff targeted Air Force education and training programs for a thorough review in his Year of Training initiative. The objective was to establish a coherent architecture for education and training to improve the quality of education and training programs. The CFETP is the core education and training document for a specialty. It establishes the framework for managing career field education and training. Creation of the CFETP is the focal point of U&TWs; in the context of R&TWs, the plan is an important product along with the AFS change proposal.</p>													
NODE: A1/TEXT	TITLE: Develop Request for AFS Restructuring				PAGE: 9								

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐
			RECOMMENDED			
			PUBLICATION			



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input type="checkbox"/>
			PUBLICATION			<input type="checkbox"/>

A111 Identify "Problems" with Current Specialties

The AFCFM, as part of his responsibilities, monitors the condition of his AFSs through contacts with MAJCOM functional managers and subject matter experts at the unit level. Based on job performance, training, and changes in equipment, problems associated with the structure of the AFS, as observed in the field by senior airmen and others, are identified. These structural problems may relate to duplication of tasks, job performance difficulty, training difficulty, career field progression, personnel utilization.

A112 Specify Goals for Restructuring

Changes in existing AFSs, be it restructuring one or more AFSs, merging two or more AFSs, among other possible changes, must be responsive to needs and problem resolution. Early in the process, goals for restructuring are established so that proposed changes are designed to respond to the needs and eliminate problems. To the extent participants in the restructuring process understand the goals early on, there is greater likelihood that change proposals will be developed that meet current and future Air Force needs.

A113 Identify Points of Contact

Participants, primarily subject matter experts, in the restructuring process must be identified and arrangements made for their active participation, initially and primarily through the AFS restructure and training workshop. These points of contact will include MAJCOM functional managers and representatives from AFMPC, AETC, OMS, among others.

A114 Gather Supporting Documents

Documentation concerning the AFSs, particularly those pertaining to requirements and responsibilities, must be gathered. This documentation includes: any pertinent Air Force policy directives (AFPDs), Air Force instructions (AFIs), Air Force manuals (AFMs), or Air Force pamphlets (AFPs); all applicable Air Force and MAJCOM job qualification standards (JQS); current AFM 36-2108 specialty descriptions; list of all MAJCOM training courses; specialty training standards (STS); course training standard (CTS), course chart, and plan of instruction; and training extracts and other occupational survey data; among others. If the nature of the potential changes to the AFSs are clear, there may also be strawman STS and CFETP at this early stage.

A115 Acquire Information from Subject Matter Experts

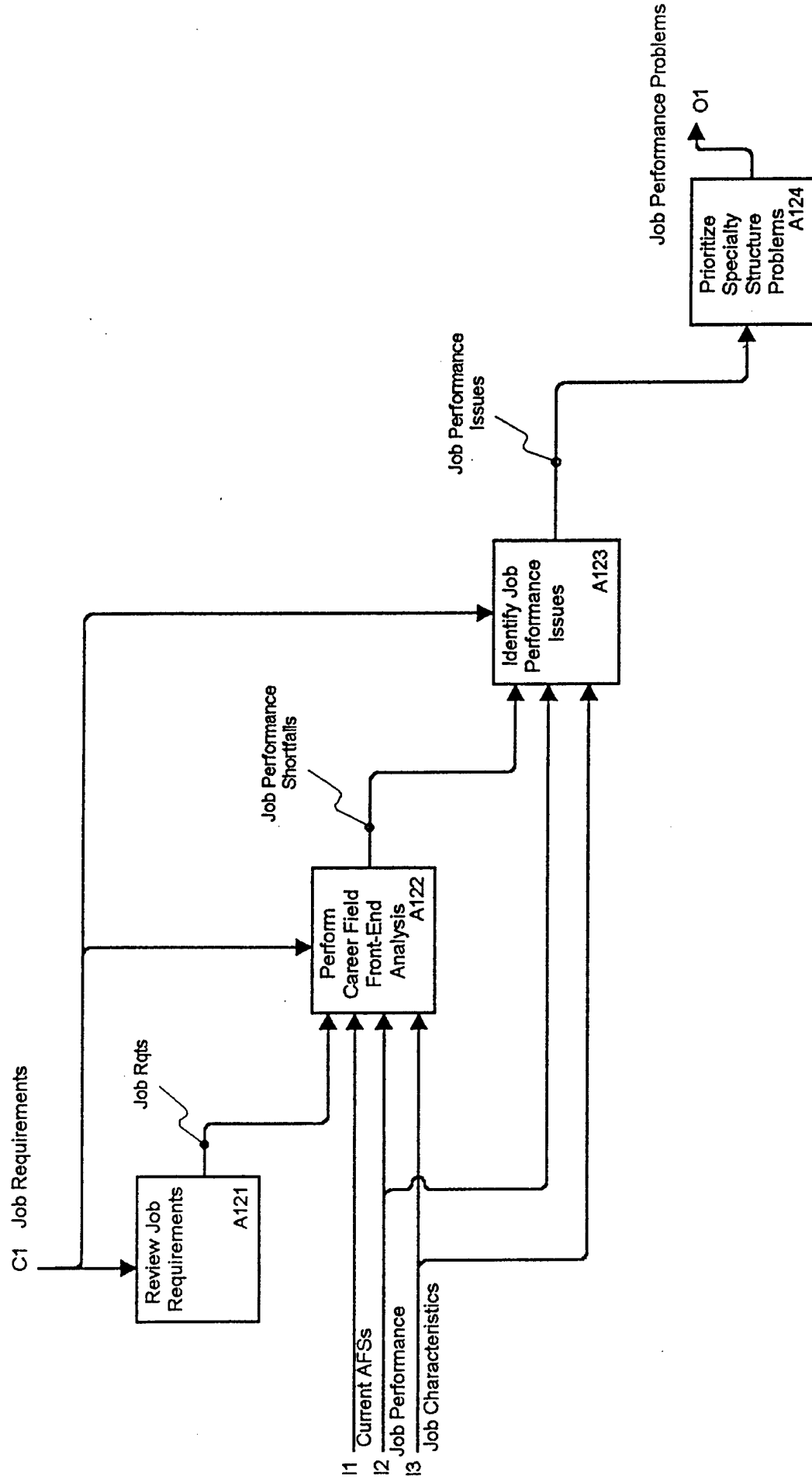
MAJCOM functional managers and other subject matter experts are asked to provide information pertaining to minimum training requirements, standards, and support resources. SMEs identify and review current job descriptions, job performance requirements, skill level training requirements, career development course training requirements, wartime training requirements, core tasks, MAJCOM unique requirements, supporting resources, and AFS conversion requirements.

A116 Convene AFS Restructure and Training Workshop (AFS R&TW)

Having laid the groundwork through the preceding steps for identifying the problems with AFSs and their current status, the AFCFM convenes an AFS R&TW, more commonly referred to as the utilization and training workshop when AFS restructuring is not the primary agenda item. AFSs may be restructured in either forum. The U&TW usually has a heavy focus on training initiatives whereas the primary agenda for an AFS R&TW is restructuring AFSs.

NODE: A11/TEXT	TITLE: Organize Restructuring Analysis	PAGE: 11
----------------	--	----------

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
			RECOMMENDED			
			PUBLICATION			



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force AUTHOR: Akman Associates, Inc.	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT: <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
			DRAFT			
			RECOMMENDED			
			PUBLICATION			

A121 Review Job Requirements

There is no explicit step to determine the performance requirements of a notional job which may become a new specialty as result of restructuring existing AFSs. However, determining these requirements is necessary to create the context in which "problems" with existing AFSs are identified. Whether this definition occurs as an explicit or implicit step, the focus on "problems" in the Air Force structuring process means that an understanding of the job requirements is developed at the beginning of the process.

A122 Perform Career Field Front-End Analysis

Job performance is reviewed in relation to the requirements for the specialty. This review aims to identify what is working well and what shortfalls exist. Shortfalls are reviewed to assess their significance in relation to overall job performance. Job performance is reviewed in relation to AFM 36-2108 job descriptions, current training standards, USAF and MAJCOM JCSs, and occupational survey reports and training extracts; performance is also reviewed based on unit experience as reported by SMEs and MAJCOM representatives. The aim is to confirm and assess the job performance problems that were the catalyst for the restructuring effort in the first place (See A111).

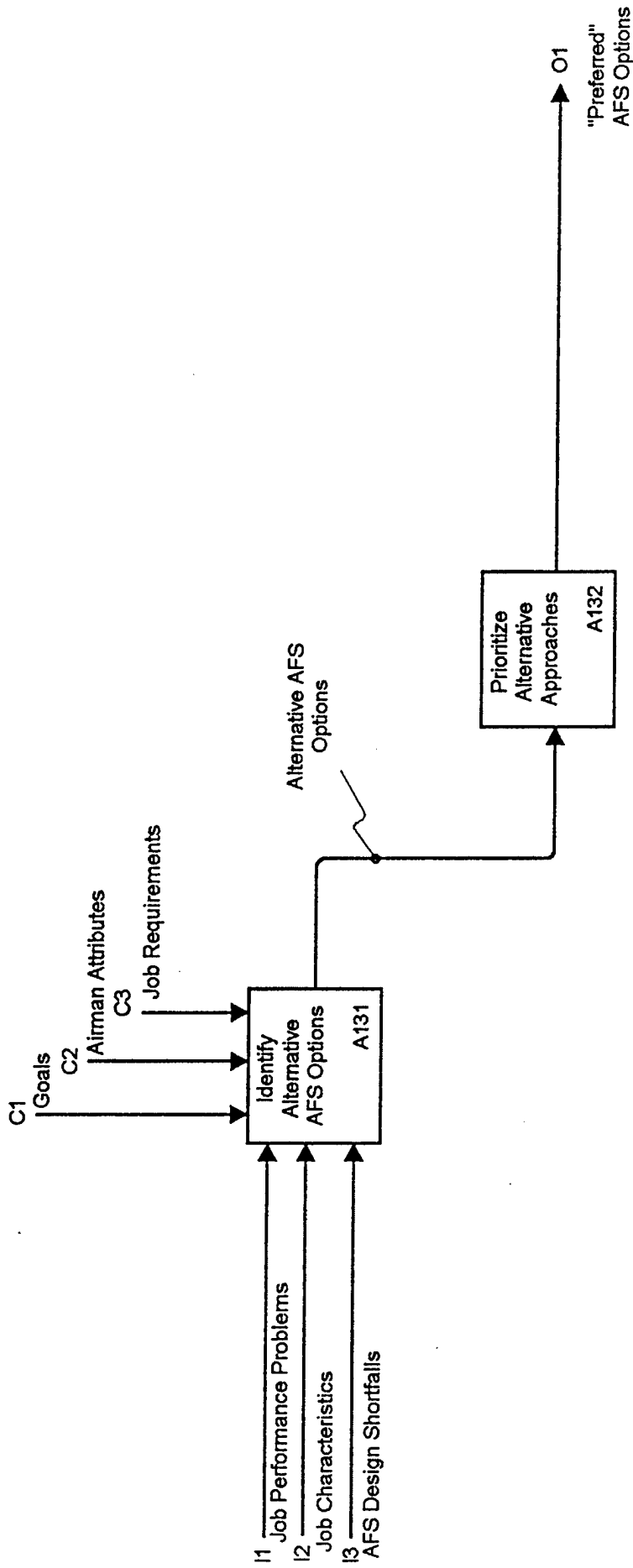
A123 Identify Job Performance Issues

Based on the review of current job performance, issues pertaining to job performance are identified. These issues may relate to duplication of tasks, job performance difficulty, training difficulty, career field progression, and personnel utilization, among others. Some of these issues may be reflected in occupational survey data that corroborates field reports.

A124 Prioritize Specialty Structure Problems

A final step in reviewing the existing job and identifying problems is to prioritize the problems in terms of their seriousness. An examination of the job performance and training issues identified in A123 occurs. Which problems must be addressed most urgently? Which ones are most important to resolve through specialty structure changes? This process results in a prioritized list of problems that need to be addressed through specialty structuring.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.	REV: 1.0	DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input type="checkbox"/>
			PUBLICATION			<input type="checkbox"/>



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
			DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input type="checkbox"/>
			PUBLICATION			<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

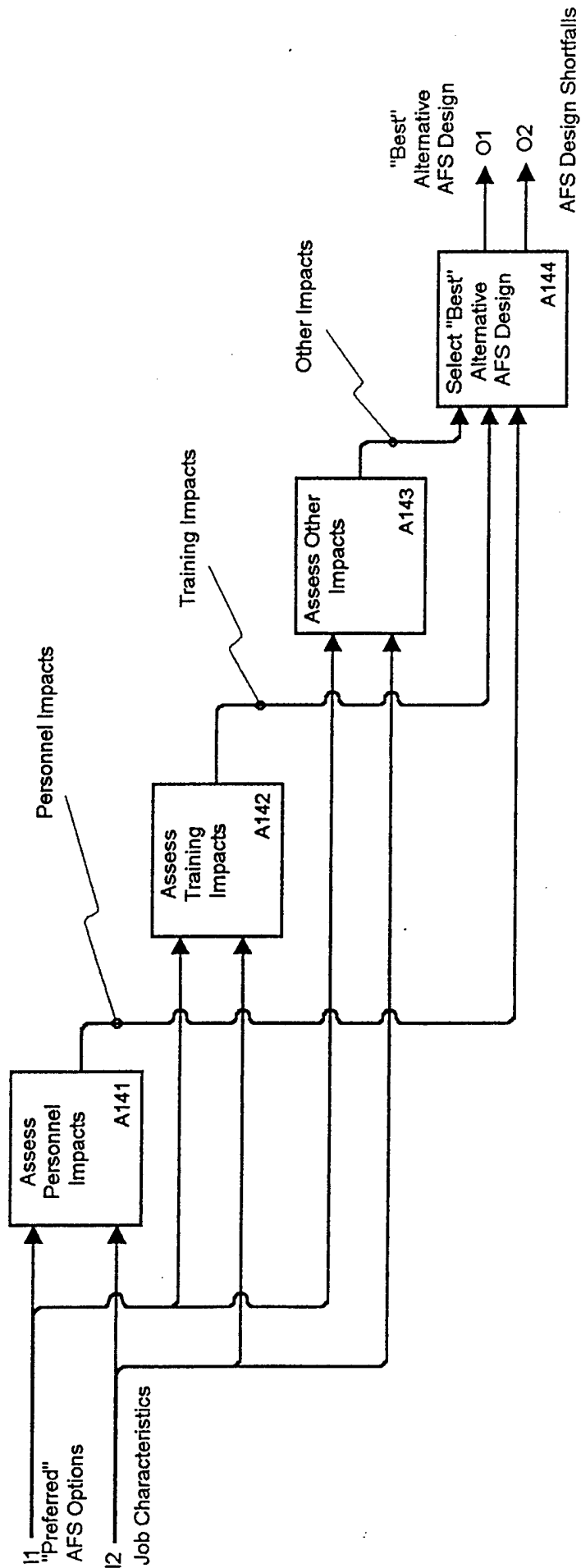
A131 Identify Alternative AFS Options

In view of the problems already identified, options are developed for restructuring the current AFSs in order to eliminate the problems. Among the options that are considered are: modifying (adding or removing) or reassigning core tasks of existing AFSs, combining two or more AFSs, recasting specialties in terms of different mixes of core tasks, adding SEIs, prefixes, or shreds. A list of options is developed.

A132 Prioritize Alternative Approaches

Based on the descriptions of the alternative approaches and considerations of how each may resolve the problems, they are rank ordered in terms of which options appear most promising. In determining the ranking, consideration is given to the advantages, the difficulties, and potential management actions associated with each option. A determination is then made with regards to which options should be investigated further (the "preferred" options).

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.	REV: 1.0	DRAFT			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
			RECOMMENDED			
			PUBLICATION			



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input type="checkbox"/>
			PUBLICATION			<input checked="" type="checkbox"/>

A141 Assess Personnel Impacts of "Preferred" AFS Restructuring Options

For the "preferred" AFS restructuring options, personnel impacts are identified and assessed. Among the areas of consideration are the following:

- Current USAF personnel needs
- Personnel utilization/combat capability
- Aptitude requirements
- Physical abilities and characteristics
- Reducing the number of AFSs
- Self-sustaining AFS population
- Career development course (CDC)/Specialty knowledge test (SKT) development
- Authorizations
- Grade structure
- Promotions and career progression
- Recruiting
- Classification
- Assignment constraints
- Separation/retirement
- Geographic assignment mix
- CONUS/overseas assignment ratio
- Job enrichment/knowledge expansion
- Management broadening for 9-level and Chief Enlisted Manager (CEM)
- Compatibility with future technology and Air Force plans
- Role of women.

Both positive and negative personnel impacts of each option are identified.

A142 Assess Training Impacts of "Preferred" AFS Restructuring Options

Each "preferred" AFS restructuring option is evaluated in terms of its training impacts. Among the areas of consideration are the following:

- Current USAF training needs
- Future changes in training resources
- Training costs (length of training)
- Training burden on individual/unit
- Trained personnel requirement (TPR) size
- Schoolhouse size
- Smooth TPR and AETC course flow.

Both positive and negative training impacts of each option are identified.

NODE: A14/TEXT	TITLE: Determine "Best" Alternative AFS Design	PAGE: 17
----------------	--	----------

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	AUTHOR: Akman Associates, Inc.	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
				DRAFT			<input type="checkbox"/>
				RECOMMENDED			<input type="checkbox"/>
				PUBLICATION			<input type="checkbox"/>

A143 Assess Other Impacts of "Preferred" AFS Restructuring Options

Each AFS restructuring option is evaluated in terms of impacts other than personnel and training. The impact on Air Force missions and requirements is considered. Also the effect on the Air Force Reserve and the Air National Guard is another critical area. Among other considerations might be interservice issues, equipment and/or tool changes, other workplace changes, and accreditation issues. Both positive and negative impacts are identified.

A144 Select "Best" Alternative AFS Option

Based on the impact analysis, one of the options is selected as "best". Effort is made to arrive at a choice which will be supported by all interested parties. In selecting the "best" option, consideration is given to the best way to meet the job requirement. The many personnel, training, and other factors are weighed. The weighting of the different factors varies from one restructuring to another depending upon the issues being addressed and the prevailing circumstances. The choice of the "best" option is made by weighing the various factors and arriving at a collective judgement with respect to which option offers the best approach. Actions that may be taken to reduce any negative impacts uncovered as part of the impact analysis are identified. The "best" alternative becomes the subject of a request for restructuring the current AFSs. In the event that a "best" option cannot be determined after these assessments, the shortfalls associated with the option are identified and additional AFS options may be identified and considered.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force		DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		REV: 1.0	DRAFT			<input type="checkbox"/>
				RECOMMENDED			<input type="checkbox"/>
				PUBLICATION			<input checked="" type="checkbox"/>

I1 "Best" Alternative AFS Design

Summarize
AFS Restruct
and Rationale
A151

Document
Changes to
Qualification
Standards
A152

Describe
Impacts and
Areas of
Concern
A153

Prepare
Revised AFM
38-2108
Description
A154

Assemble
Request for
AFS
Restructuring
A155

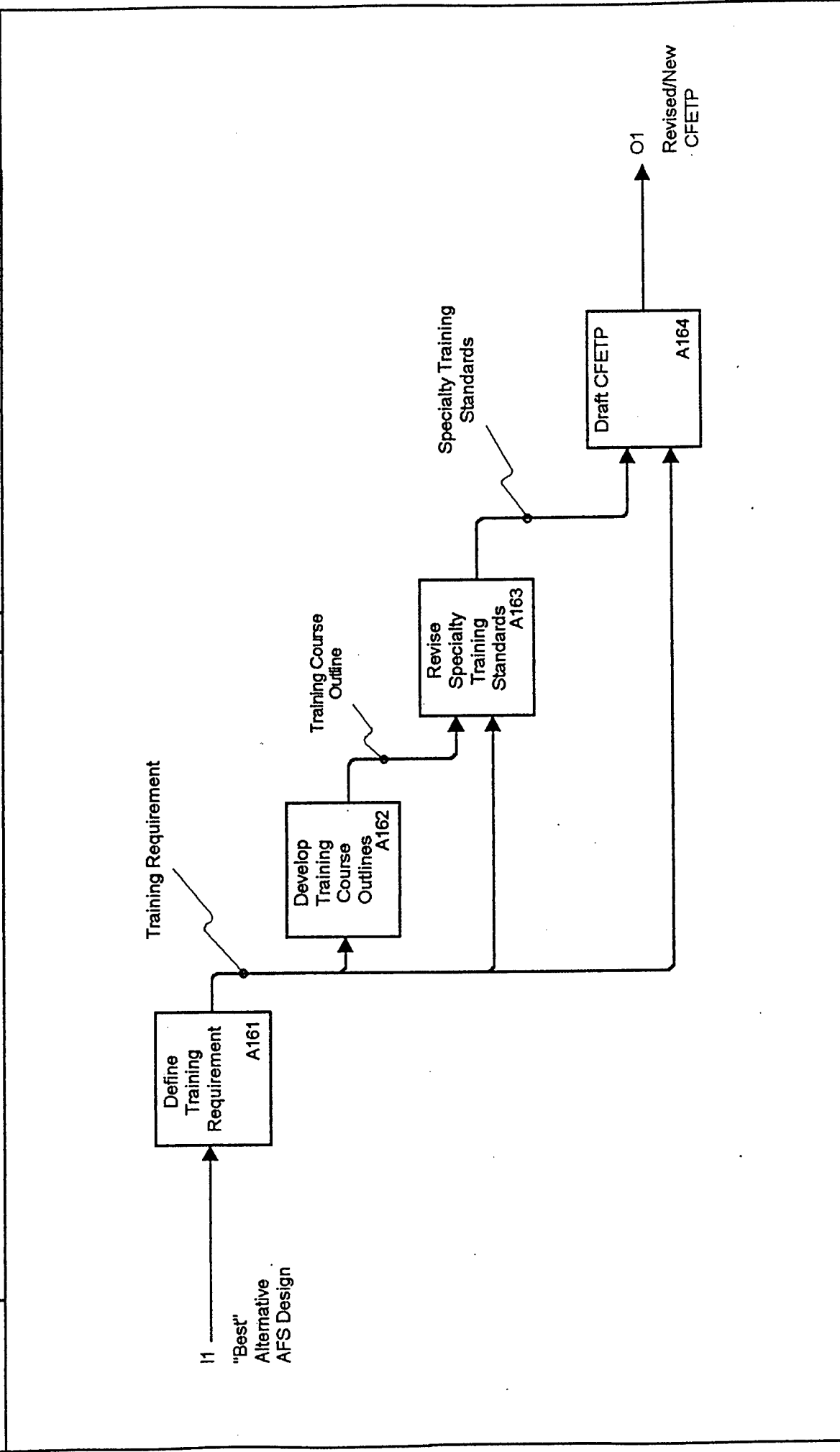
O1
Request for AFS Restructuring

O2
Draft Transition Plan

NODE: A15	TITLE: Document Request for AFS Restructuring	PAGE: 19
-----------	---	----------

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force AUTHOR: Akman Associates, Inc.	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
		REV: 1.0				
<p>A151 Summarize AFS Restructuring and Justification/Rationale</p> <p>A brief description of the proposed changes in the specialty structure is prepared. This shows the relationship of the changes to the existing classification structure. Also, the rationale for the proposed changes is explained. In accordance with AFM 36-2108, this documents the reasons why the existing classification structure is inadequate and provides a full justification for the change request.</p> <p>A152 Document Changes to Specialty Qualification Standards</p> <p>Changes to the personnel qualification standards for the proposed AFS(s) are documented. These qualifications may include changes to mechanical, administrative, general, and electronic (MAGE) scores, strength aptitude, education, experience, and PULHES, among others. The qualifications may be identified as mandatory or desirable.</p> <p>A153 Describe Impacts and Areas of Concern</p> <p>The results of the impact analysis are documented. This discusses all considerations examined in developing the change proposal, both the pros and cons. The most significant impacts supporting the change are identified as are those impacts that are least supportive. Areas of concern are also documented; these are issues that bear on the potential success of the changes in meeting the job requirements and addressing the original problems. These statements reflect concerns for the using commands as well as the Air Force as a whole.</p> <p>A154 Prepare Revised AFM 36-2108 Description</p> <p>A revised specialty description, consistent with the AFM 36-2108 format, is prepared. This usually consists of three parts. First, there is a summary of the specialty's duties and responsibilities. Second, there is a more detailed description of duties and responsibilities; major tasks, equipment, special tools, and materials are identified. Third, there are details regarding specialty qualifications including knowledge, education, training, experience, and other requirements for performing the duties and tasks of the specialty. Changes in the description from the original are noted for ease of reference during the review process. Under AFR 39-1, this description distinguished among requirements at each skill level; more recent guidance simply documents these specialty characteristics in a more generic fashion leaving skill level detail for the CFETP.</p> <p>A155 Assemble Request for AFS Restructuring</p> <p>The documentation describing the AFS restructuring, its rationale, changes to qualification standards, impacts and areas of concern as well as the revised specialty description are assembled into a request for AFS restructuring. This is prepared in accordance with requirements set forth in AFM 36-2108.</p> <p>A156 Formulate Transition Plan</p> <p>Once the decision is made regarding the "best" option, a transition plan is formulated. This plan identifies milestones and action OPRs. There is a complete transition training plan identifying AETC, MAJCOM, and unit tasks. The aim is to provide a smooth transition, facilitate training, and minimize impacts on personnel and units as the changes are formalized and become effective.</p>						
NODE: A15/TEXT	TITLE: Document Request for AFS Restructuring	PAGE: 20				

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.	REV: 1.0			<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
			WORKING		
			DRAFT		
			RECOMMENDED		
			PUBLICATION		



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force AUTHOR: Akman Associates, Inc.	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
		REV: 1.0				

A161 Define Training Requirement

An initial step in developing the CFETP is defining the training requirement. The starting point is an examination of the current 3-level tech school training to determine revisions necessary to meet requirements of the new specialties. Once the 3-level course requirements are determined, requirements for 5- and 7-level training and career development courses are also determined.

A162 Develop Training Course Outlines

Based on the training requirements, outlines are developed for new and revised AFS awarding courses at the 3-level and CDCs at the 5- and 7-level. The outlines identify course content and approximate hours in reference to core tasks. In addition, content for supplemental and exportable courses as well as transition training is also identified.

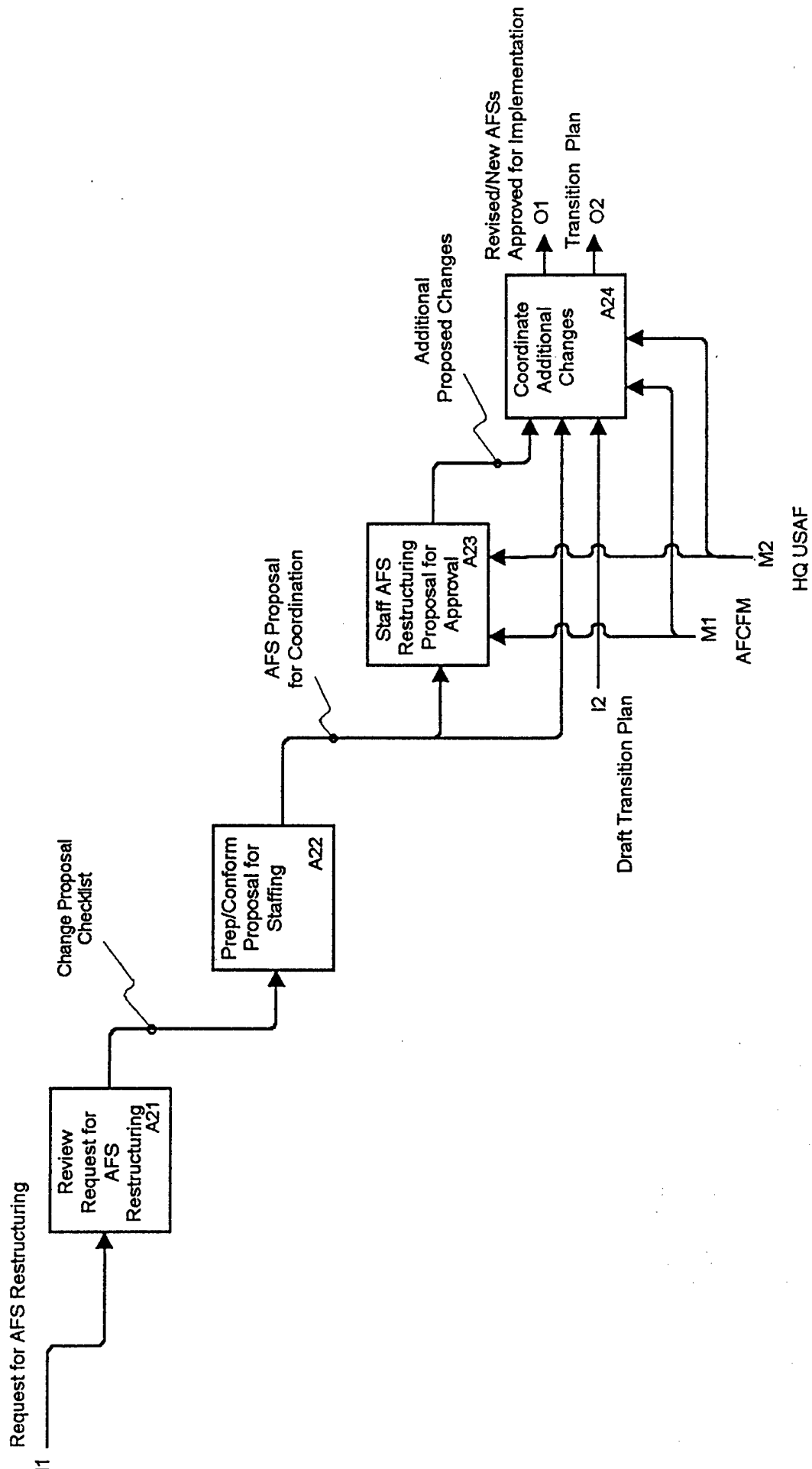
A163 Revise Specialty Training Standards

If STSs exist for the AFSs being restructured or if "strawman" STSs exist, these are reviewed and revised based on the new set of duties and tasks. Tasks, knowledge, and technical references for the revised AFSs are determined and listed in standard STS format. Behavioral objectives and qualitative requirements are identified for the 3-level course, 5- and 7-level career development courses, and the 7-level course, as appropriate.

A164 Draft CFETP

Based on the analysis of training requirements and the development of the STS, a strawman CFETP, consisting of two parts, is prepared. The first part documents general background information, career field progression and information, definition of skill level training, and resource constraints. Part II contains the training course index listing the AF JQS and JQT packages, Air Force Engineering and Technical Services (AFETS) training, and the specialty training standard. During the R&TW, the strawman CFETP is reviewed, modifications are made as necessary, and a final version of the CFETP is prepared.

USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94 REV: 1.0	WORKING	READER	DATE	CONTEXT:
	AUTHOR: Akman Associates, Inc.		DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input checked="" type="checkbox"/>
			PUBLICATION			



USED AT:	PROJECT: DoD Job Structuring Processes: Air Force	DATE: 07/28/94	WORKING	READER	DATE	CONTEXT:
			DRAFT			<input type="checkbox"/>
			RECOMMENDED			<input checked="" type="checkbox"/>
			PUBLICATION			
AUTHOR: Akman Associates, Inc.		REV: 1.0				

A21 Review Request for AFS Restructuring

The AFS change request, when received by AFMPC, must be reviewed for completeness and conformance with requirements of AFM 36-2108. To facilitate this review process, AFMPC uses its "Change Proposal Checklist". Among the principal sets of information that are checked are the following:

- Transmittal letter with coordinating agencies identified
- Proposal memorandum for the record summarizing the main features of the change including MPT impacts, areas of concern, revised AFM 36-2108 description, change summary and conversion guide (CS/CG).

If required items are not included in the change request, the initiating party is contacted to provide the missing material.

A22 Prepare/Conform Proposal for Staffing

AFMPC prepares the coordination package for distribution among the reviewing agencies. The package includes a cover letter identifying the changes and requesting coordination and approval, a summary of the proposed change, the CS/CG, and the revised AFM 36-2108 description.

A23 Staff AFS Restructuring Proposal for Approval

The complete AFS restructuring proposal is distributed for review and approval. Principal agencies participating in the review include the Air Staff, the AFCFM, AETC, and AFMPC. All parties review the proposed changes and determine if the best interests of the Air Force and their organization will be met. The coordination occurs usually over a 30 day period, although the time period may be longer or shorter depending upon the circumstances.

A24 Coordinate Additional Changes

If problems are identified during the staffing, appropriate changes are negotiated between the disputing party, the initiating agency, and AFMPC. If the change has material impact on the AFS restructuring proposal from the perspective of other Air Force agencies, the revised package is distributed again for coordination.

Acronyms

ACC . . . Air Combat Command
AETC . . . Air Education and Training Command
AFCFM . . . Air Force Career Field Manager
AFCT . . . Armed Forces Classification Test
AFETS . . . Air Force Engineering and Technical Services

AFI . . . Air Force Instruction
AFM . . . Air Force Manual
AFMC . . . Air Force Materiel Command
AFMEA . . . Air Force Management Engineering Agency
AFMPC . . . Air Force Military Personnel Center

AFPD . . . Air Force Policy Directive
AFR . . . Air Force Regulation
AFRES . . . Air Force Reserve
AFS . . . Air Force Specialty
AFSC . . . Air Force Specialty Code

AFSOC . . . Air Force Special Operations Command
AFVA . . . Air Force Visual Aid
AKT . . . Apprentice Knowledge Test
AL/HR . . . Armstrong Laboratory/Human Resources Directorate
AMC . . . Air Mobility Command

ANG . . . Air National Guard
ASVAB . . . Armed Services Vocational Aptitude Battery
CAMS . . . Core Automated Maintenance System
CBPO . . . Consolidated Base Personnel Office
CDC . . . Career Development Course

CEM . . . Chief Enlisted Manager
CFETP . . . Career Field Education and Training Plan
CODAP . . . Comprehensive Occupational Data Analysis Program
CS/CG . . . Change Summary and Conversion Guide
CTS . . . Course Training Standard

DAFSC . . . Duty Air Force Specialty Classification
DoD . . . Department of Defense
DSS . . . Decision Support System
FY . . . Fiscal Year
GUI . . . Graphical User Interface

HAFMDS . . . Headquarters Air Force Manpower Data System
HQ . . . Headquarters
ICOM . . . Input, Control, Output, Mechanisim
IDEF . . . Integrated Computer and Manufacturing Definition
Methodology
JQS . . . Job Qualification Standard

JQT . . . Job Qualification Test
 JSDA . . . Job Structure Decision Aid
 LCOM . . . Logistics Composite Model
 LSAR . . . Logistics Support Analysis Record
 MAJCOM . . Major Command

 MAGE . . . Mechanical, Administrative, General, Electronic
 MDC . . . Maintenance Data Collection
 MPT DSS . Manpower, Personnel, and Training Decision Support
 System
 OJT . . . On-the-Job Training
 OMS . . . Occupational Measurement Squadron

 OPR . . . Office of Primary Responsibility
 ORDB . . . Occupational Research Data Base
 OSR . . . Occupational Survey Report
 PC . . . Personal Computer
 POI . . . Plan of Instruction

 PULHES . Physical Demands
 R&TW . . . Restructure and Training Workshop
 RAM . . . Random Access Memory
 RISC . . . Reduced Instruction Set Computing
 SEI . . . Special Experience Identifier

 SKA . . . Skill, Knowledge, Ability
 SKT . . . Specialty Knowledge Test
 SME . . . Subject Matter Expert
 STS . . . Specialty Training Standard
 TAD . . . Target Audience Description

 TIDES . . Training Impact Decision System
 TPR . . . Trained Personnel Requirements
 TPT . . . Training Planning Team
 U&TW . . Utilization and Training Workshop
 UAR . . . Uniform Airman Record

 UMD . . . Unit Manpower Document
 USAF . . . United States Air Force
 VGA . . . Video Graphics Array
 WUC . . . Work Unit Code

References

Air Force Regulations and Manuals

- AFI 36-2623 (1994). Occupational Analysis. Washington, D.C.: Headquarters, U.S. Air Force.
- AFM 171-605 (1985). Logistics Composite Model (LCOM) System User Manual Simulation Subsystem. Washington, D.C.: Headquarters, U.S. Air Force.
- AFR 35-1 (1990). Military Personnel Classification Policy. Washington, D.C.: Headquarters, U.S. Air Force.
- AFR 39-1 (1991). Airman Classification. Washington, D.C.: Headquarters, U.S. Air Force.

Technical Publications and Manuals

- Boyle, E. (1990). LCOM explained. Interim technical paper, AFHRL-TP-90-58. Brooks AFB, TX: Air Force Human Resources Laboratory.
- Chin, Keric B.O., Lamb, T.A., Bennett, W.R., & Vaughan, D.S. (1992), Introduction to training decisions modeling technologies: The training decision system. (AL-TP-1992-0014). Brooks AFB, TX: Human Resources Directorate, Armstrong Laboratory.
- Driskill, W.E. (1994). White paper: Tailoring occupational learning difficulty indices for existing and restructured Air Force specialties. San Antonio, TX: Metrica, Inc.
- Driskill, W.E., Boyle, E., & Garcia, S.K., (1986). Task identification and evaluation system (TIES). Contract No. F33615-83-C-0030, San Antonio, TX: The Maxima Corporation.
- Dynamics Research Corporation (1992). Management Plan for the Development of a Prototype Manpower, Personnel, and Training (MPT) Decision Support System. Contract F33615-91-C-0008. Wilmington, MA.
- Leighton, D.L., Kageff, L.L., Mosher, G.P., Gribben, M.A., Faneuff, R.S., Demetriades, E.T., & Skinner, M.J. (1992). Measurement of productive capacity: a methodology for Air Force enlisted specialties (AL-TP-1992-0029). Brooks AFB, TX: Armstrong Laboratory.

- Maginnis, E.B., Uchima, A., Smith, C.E. (1975). Establishing aptitude requirements for Air Force jobs: Historical review of aptitude levels and impact on personnel system (AFHRL-TR-75-44(I)). Brooks AFB, TX: Air Force Human Resources Laboratory.
- Maginnis, E.B., Uchima, A., Smith, C.E. (1975). Establishing aptitude requirements for Air Force jobs: Some personnel system actions to offset negative impacts of aptitude changes (AFHRL-TR-75-44(II)). Brooks AFB, TX: Air Force Human Resources Laboratory.
- Maginnis, E.B., Uchima, A., Smith, C.E. (1975). Establishing aptitude requirements for Air Force jobs: Methodological approaches (AFHRL-TR-75-44(III)). Brooks AFB, TX: Air Force Human Resources Laboratory.
- META Software Corporation (1987-1994). Design/IDEF tutorial version 3.0. Cambridge, MA: META Software Corporation.
- META Software Corporation (1987-1994). Design/IDEF user's manual version 3.0. Cambridge, MA: META Software Corporation.
- Mitchell, J.L., Sturdevant, W.A., Vaughan, D.S., & Reuter, F.H. (1985). Training decision system information gathering task IV. Contract No. F33615-83-C-0028. St. Louis, MO: McDonnell Douglas Astronautics Company.
- Mitchell, J.L., Vaughan, D.S., Knight, J.R., Reuter, F.H., Fast, J., Haynes, W.R., & Bennett, W.R. (1992). Training decisions technology analysis (AL-TP-1992-0026). Brooks AFB, TX: Human Resources Directorate, Armstrong Laboratory.
- Mitchell, J.L., Yadrick, R.M., & Bennett, W.R. (1993). Estimating training requirements from job and training models. Military Psychology 5(1):1-20, Journal of the Division of Military Psychology, American Psychological Association.
- OA Corporation (1988). Occupational research data bank user's manual. San Antonio, TX: OA Corporation.
- Office of the Assistant Secretary of Defense (Force Management & Personnel (1992). Corporate information management (CIM): Manage military personnel process. Air Force Working Group. Washington, D.C.: Department of Defense.
- Weeks, J. (1984). Occupational learning difficulty: a standard for determining the order of aptitude requirement minimums. (AFHRL-SR-84-26). Brooks AFB, TX: Air Force Human Resources Laboratory.

- Weissmuller, J., Tartell, J.S., & Phalen, W.J. (1988). Introduction to operational ASCII CODAP: an overview. Symposium on new ASCII CODAP technology for manpower, personnel, and training applications. 30th Annual Conference of the Military Testing Association.
- U.S. Air Force, AL/HRMJ (1993). "Prototype Job Structuring Decision Aid, Metrica, Inc. Research Contract Project Summary". Brooks AFB, TX.
- U.S. Air Force, USAFOMS/OMYO (1993). Occupational analyst handbook: a guidebook for occupational analysts working with enlisted career ladders. Randolph AFB, TX.